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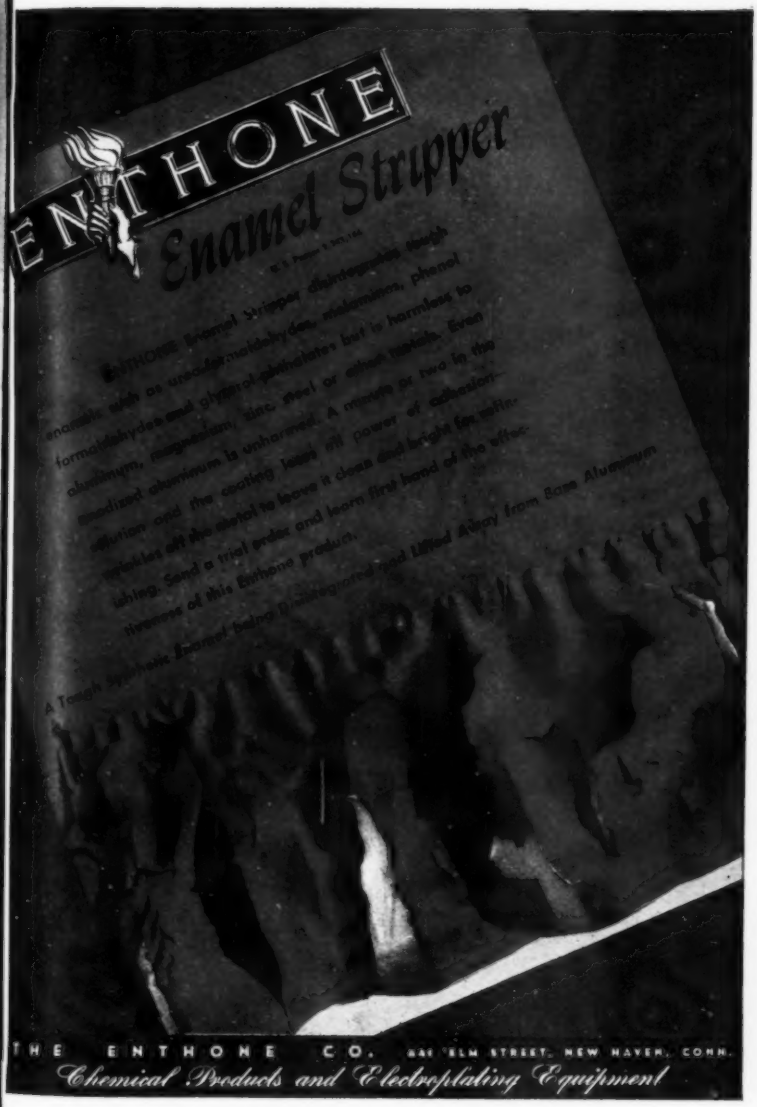
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Enamel Stripper
THE ENTHONE CO. 442 ELM STREET, NEW HAVEN, CONN.
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The Sterling 1000 quickly deburrs drilled, punched and stamped metal parts.

Shop men everywhere tell us that dozens of sanding jobs are now done in maintenance, heavy-duty production, and manufacturing in half the time with the Sterling 1000 Portable Electric Sander.

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Sterling is the only manufacturer of both portable electric and air-driven finishing sanders—sold by leading distributors.

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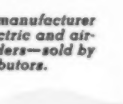
PORTABLE
ELECTRIC SANDER



TWENTY-FIRST YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor E. A. DOSCH, Assoc. Editor

Vol. XXI, No. 6 APRIL, 1945 $2.00 a Year

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Eastern Representative: C. A. Larson, 254 West 31st St., New York 1, N. Y.; Phone Penna. 6-9049

Letters from Readers

Strip Steel Cleaning and Roller-Coat Finishing

Will you please inform me the names of a few manufacturers of metal degreasing machines, roller-coating machines, and ovens for producing lacquered strip steel?—W. H.

Information supplied.—ED.

Roller Coating Machines

I am interested in applying a continuous lacquer coating on material made of plastic approximately .005-in. thick and 26-in. in width. I would appreciate your sending me a list of manufacturers making roller-coating machines which could do the above job.—E. E.

Information supplied.—ED.

Control of Quality

We will appreciate tear sheets of the article, "Control of Quality in our Aircraft Finishing," by W. D. Caldwell, as published in Oct. 1943 issue of INDUSTRIAL FINISHING Magazine.—LIBRARY OF INDUSTRIAL RESEARCH.

Tear sheets supplied.—ED.

Silk-Screen Work

We would appreciate it if you would send us information relative to silk-screen work — where can we contact manufacturers of this equipment, supplies, etc. Here is a little problem you might be able to help us on, this being in regard to stenciling an emblem on small handles which are dipped red; then the emblem is put on; and then a coat of lacquer over-all. Any information you can give us will be appreciated.—M. L. Co.

Names of silk-screen stencil manufacturers are being sent you by letter. Have you considered decals for those small red handles? They might serve your purpose better than stencils — that is for small diameter round handles.—ED.

Centrifugal Drying

Where can we obtain a catalog for centrifugal drying? We would like to dry small brass articles which would be dipped in air-drying lacquer.—(Metal Goods).

Who Will Lay Out New Finishing Plant?

We are contemplating the installation of a complete new job-finishing plant and are writing you to suggest some engineering firm who would be interested in going over our requirements and working on a complete new layout. This project will include the construction of a new building entirely separate from our own plant. Any information you can give us will be appreciated.—M. W. Co.

We are submitting names and addresses of a few individuals and firms who are qualified to handle your proposition.—ED.

Tumble Finishing

We would appreciate it if you would send us two copies of any articles you have concerning tumbling enamels — their formulation, application, or any literature involving tumbling enamels you may have.—R. Co.

We are sending you a reprint of an article we published on this subject.—ED.

Bowling Alley Lacquer

I have been reading your magazine very closely to find a clue to my finishing problem, but have not succeeded.

I am looking for a lacquer that will have a "slippery" or "oily" surface when dry, without the necessity of applying a polish, oil or wax to the finish. The lacquer must be colorless, have high resistance to impact and abrasion, and maintain a high gloss.

In my work the lacquer is applied to bowling alleys. The lacquers now

(Continued on page 8)

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SAMPLES OF THE FOLLOWING ITEMS ARE AVAILABLE NOW...

NEW:
Synthetic Enamels
Sanding Surfacers
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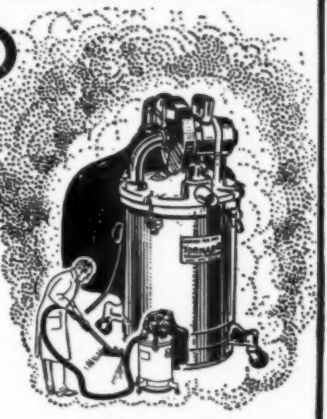
TORNADO *settles your* DUST *problem*



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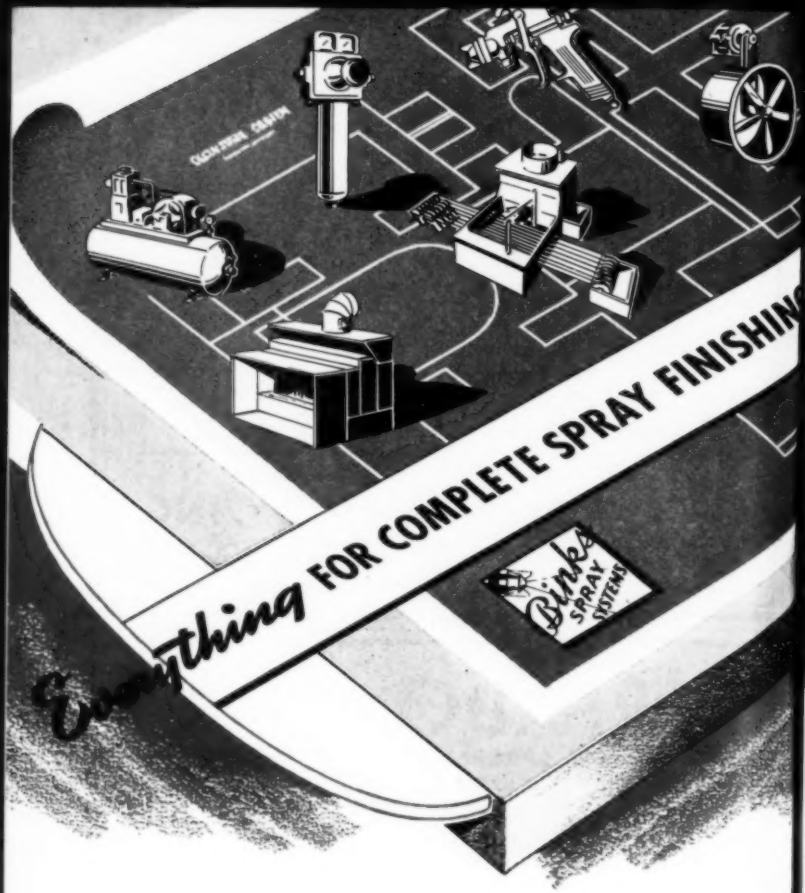

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Write Today for Bulletin AB-38

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INDUSTRIAL EQUIPMENT
EVANSVILLE 8, INDIANA

used are "picked up" by the bowling ball sliding over the surface, unless an oil is applied to the lacquered surface to decrease the friction. The application of any oil to bowling alleys does not make an ideal surface to bowl on; it is too hard to control the bowling ball, as any bowler can testify.

I might compare the ordinary lacquers to a brass bearing that requires daily lubrication, and the lacquer I desire to a graphite bearing which supplies its own lubrication. If you cannot supply a lacquer formula with the above qualities, please forward this letter to some one who can.—S. S.

Stain Manufacturer

While we manufacture a complete line of furniture lacquers, we do not manufacture any lacquer or spirit stains. We are wondering if you know of some company who does manufacture these stains, but does not manufacture the finishing lacquers, so that we might refer inquiries to them for lacquer and spirit stains?—S. Co.

We are referring you to two companies who, we believe, meet your specifications.—ED.

Flock Finishing

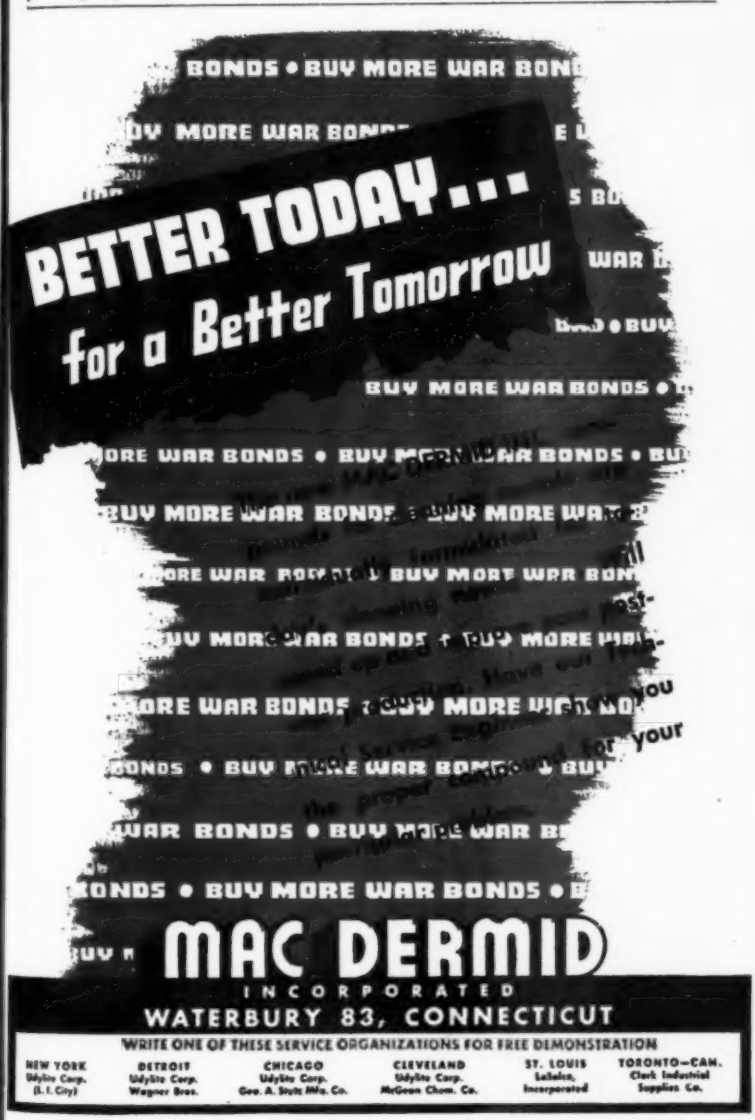
Please mail us one copy of INDUSTRIAL FINISHING Magazine. We are interested in purchasing equipment and material for the application of green flock to wood surfaces.—C. L. Co.

We are a newly-formed organization and would like to familiarize ourselves with any available information on the subject of "flocking". In the second article on page 4 of the Feb. 1945 issue of INDUSTRIAL FINISHING, one of your readers requested a copy of your magazine containing a lengthy article on "flocking." Will you please advise us how we may obtain a copy of this article, or the issue of the magazine in which this article appears?—F.I.Co.

A feature article, "FINISHING WITH FLOCK," was published in Oct. issue of this magazine (pages 67 to 74). We are sending you tear sheets of it.

Zinc Chromate Primer Articles Wanted

I am interested in obtaining the series of articles by Paul O. Blackmore, published in INDUSTRIAL FINISHING on the "Theory and Use of Zinc Chromate Primers." They are in Vol. 20, Nos. 7 and 8 (1944). Unfortun-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Both Beautiful
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If your product must take punishment and still look bright and attractive, SILCOize it. SILCO is a new finish for steel and brass that stubbornly resists corrosion, impact and abrasion—stands heat up to 1000° F. —and is unaffected by mild alaklis, most acids.

In face of all this, it has a beautiful eggshell finish available in black, white and any color. Anybody can work SILCO. Just spray it on and dry it at 200° F. Then cure in a half hour in any industrial oven at 350° F. A gallon covers 700 sq. ft. Priority free. Send parts for sample processing today.

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A fast black oxide finish for zinc, copper, brass and cadmium. A rich black that won't rub off. Also a one-bath process for all steels except stainless that works at 300° F. No priority. Ordnance approval. Samples on request.

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"WITCH DIP" FINAL FINISH
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SILCO VITREOUS-TYPE FINISH

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CHEMICAL COMPANY
MODERN METAL FINISHES

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BRIDGEPORT, CONN.
Midwest Field Office, 2651 W. Greenleaf Ave., Chicago 45

ately INDUSTRIAL FINISHING is not available locally (Mare Island, Calif.). I would appreciate it if you could send me a reprint of the above articles if it is available.—Z. (Chemist, U.S.N.).

Reprint sent.—ED.

Finishing Aluminum

Please send us tear sheets of the article on "Finishing Aluminum With Paint Coating," by Robert I. Wray, as published in January, 1945 issue of INDUSTRIAL FINISHING.—K. Co.

"Spray Gun Air Caps" Article Popular

In the February, 1945 issue of INDUSTRIAL FINISHING Magazine there appears an article on Spray Gun Air Caps, by Peter P. Wood. Would it be possible to obtain 100 reprints of this article? If so, will you please advise the writer the cost of the 100 reprints, and we will send you a check by return mail.—X.

I am very much interested in the article in February issue of INDUSTRIAL FINISHING Magazine, written by Mr. Peter P. Wood, concerning various types of spray gun air caps. This is one of the most informative articles on air caps I have ever been fortunate enough to read, and I would appreciate knowing what company manufactures them.—Y.

For Dipping Beads

We are interested in obtaining a machine for dipping strung pearls, and are writing you in the hope that you can refer us to a manufacturer of these machines.—(Bead Mfr.).

We know of no manufacturer of a dipping machine suitable for your work. Our suggestion is that you have a custom machine designed and built to do the job.—ED.

White Stove Enamel

On page 6 of February, 1945 issue, you refer to heat-proof coatings. We, like other stove manufacturers, have been looking for a white organic finish for the exterior of our peacetime products for some years, and have run tests on many so-called finishes of this type, without success.

We understand that several finishes in colors are available which will with-

(Continued on page 104)

... a good name to remember!

ARMY E NAVY

In the constant battle against rust and corrosion—in peacetime as in war— it will pay you to remember "Vedoc", an exceptionally fine synthetic finish.

Today, the makers of "Vedoc" are engaged 100% in making war paints. When peace comes, however, they will be ready with a complete line of new and improved finishes . . . for such products as washing machines, refrigerators, kitchen cabinets, other durable consumer goods.

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Write today for FREE Booklet and Prices

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ENTIRE MASS PRODUCTION FACILITIES AND PERSONNEL OF
ELECTRIC SPRAYIT CO.
TO PRODUCE MORE AND MORE PRECISION WAR IMPLEMENTS
PROGRAM WILL CHANGE WHEN THE BIG SHOW IN VARIOUS WAR THEATERS PERMITS!
KEEP BUYING WAR BONDS
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OUR next attraction offers a "double feature" that will include a new and finer performance by Sprayit, and the Premier showing of a sure hit by Elsco... Production by Sprayit will surpass all Paint Spraying Equipment... Air Compressors... Spray Guns ...Pumps... Air Tools... Insecticide Sprayers... Sanders and Allied Finishing Equipment that we have ever shown... Elsco's cast will be headed by these new stars... Electric Motors... Generators... Valves... Pumps... Hydraulic Cylinders and Controls for Aircraft, Automotive and other Industrial Application. When billing your own postwar show... keep these two fine attractions in mind.

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FOR APPLICATION TO WOOD, METAL, GLASS, PLASTIC and OTHER SURFACES

Give you quick, easy application. Utmost durability, uniform appearance and permanency. Washable and impervious to oils and greases. Sharp and legible in any color combination.

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RUFKAST Goes to War on Instrument Panels

... Non-Glaring
... Large, Medium and Fine Wrinkle

Speed up war production with this new, improved Berry Brothers' Rufkast. Quick baking means more production. Strong wrinkling action protects it against shiners—results in fewer rejects. Nonglaring surface cuts down eye strain—makes the fine-pattern-dull an ideal finish for instrument panels.

Use Berry Brothers' Rufkast as a time-saving finish on radio and radar equipment.

All three patterns—large, medium and fine—can be baked with infra red equipment, as well as in gas or electric ovens. All wrinkle properly, even under high initial heat. Edges and corners wrinkle uniformly, and hardening of film continues after baking, due to oxidation of drying oil.

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that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

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Manual, automatic and special airpainting equipment, airfinishing booths, pressure regulators, airconditioners for compressed air lines, air dusters and stripers.

TWO WAYS TO FINISH THE JOB FASTER—Buy Extra War Bonds—Airpaint with Paasche

THE LILLY COMPANY
HIGH POINT, N. C.

more BONDS to drop more BOMBS

The 7th War Loan drive will open about May 4th. Let's all get behind this drive and make it a big success. In this way we'll be doing at least a small part in helping our boys "finish" the Nazis and Nips.

Buy more LILLY FINISHES . . .

Yes, and you'll finish right if you buy more LILLY'S DEPENDABLE FINISHES. Over 14 years ago we adopted the slogan "With the right finish—you'll finish right" and since that time we have been making specific finishes for specific products and purposes. For a finishing material made to fit your particular product, get in touch with any of the Lilly plants listed below.*

*Indianapolis, Ind. *High Point, N. C. *Gardner, Mass.

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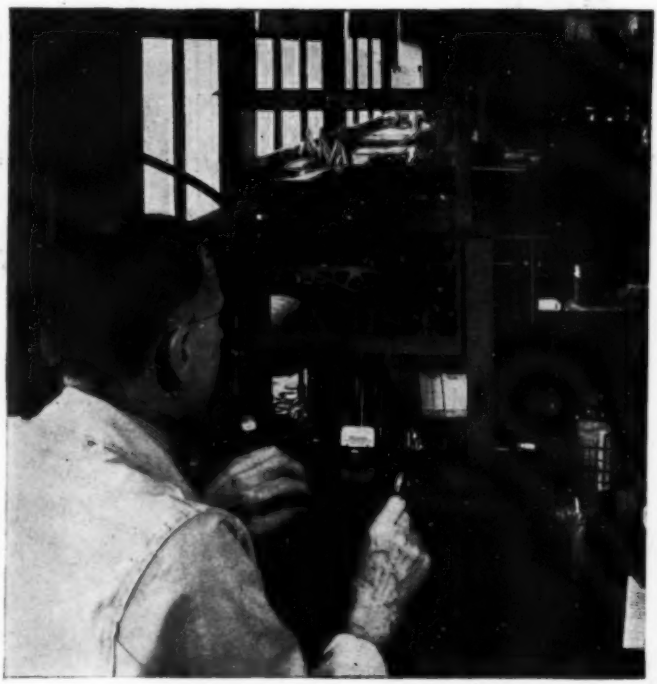
INDIANAPOLIS, IND.

So delicate it can weigh



THE PYKNOMETER: This super-sensitive instrument is used by Pittsburgh Laboratory Technicians to determine the bulking value* of pigments. The analytical balance used for determinations is so delicate and accurate that *even a pencil mark can be weighed!*

*Pounds of pigment which, when incorporated into a vehicle, will increase the volume by one gallon.

a pencil mark . . .

The Pyknometer, One of Many Precision Instruments Used for Testing Raw Materials in the Pittsburgh Laboratories, Is Evidence of Our Constant Vigilance to Produce Industrial Finishes *of Uniform High Quality.*

NOTHING is left to guesswork in the manufacture of Pittsburgh Industrial Finishes! Every finish must pass the most exacting tests ever devised to prove its right to the Pittsburgh label. Raw materials, such as pigments, oils, resins, solvents and thinners, are constantly under "microscopic" inspection, to make certain the finished products measure up to Pittsburgh's rigid standards of uniformity and performance.

• In Pittsburgh's Analytical and Testing Laboratories can be found electronic instruments, ultra violet ray apparatus, baking and freezing cabinets, accelerated weather wheels, salt spray cabinets and blistering equipment — all employed for testing and checking color permanency, texture, drying and other qualities.

• Pittsburgh Industrial Finishes can be relied upon to deliver quality and performance "plus" to meet your specialized requirements. Ask us for enlightening facts and figures on Pittsburgh Finishes for your purpose.

Pittsburgh Paint Flies with the "MARS"

This gigantic craft of the U. S. Navy needs more than 100 gallons of Pittsburgh Zinc Chromate Primer to protect her metal parts against the corrosive effects of salt air and spray. Her fabric surfaces are covered with 80 gallons of Pittsburgh Nitrate Dopes—clear dope to tighten the fabric and pigmented dope for final color coats. Pittsburgh makes a wide variety of Aircraft Finishes for every purpose.

PITTSBURGH PLATE GLASS COMPANY, Industrial Paint Division, Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Houston, Texas; Los Angeles, Calif.; Portland, Ore. Ditzler Color Division, Detroit, Mich. The Thresher Varnish Co., Dayton, O.

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Let Us Develop

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The experience of our two research laboratories in the development of coatings for Tanks, Planes, Ships, Shells, Guns and other Military equipment as well as finishes for refrigerators, stoves, steel cabinets, electrical equipment, furniture, agricultural equipment, motor vehicles, etc., assures you the perfect finish for your Peace Time products.

We invite you to submit your finishing problems to us.

Our Technical Staff will be pleased to work with you—NOW.

— No cost or obligation —

INDUSTRIAL DIVISION

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INFRA-RED EQUIPMENT MANUFACTURERS and PAINT MAKERS CAN AGREE ON

PENETRAY

No longer is "passing-the-buck" a game to be played by paint men versus equipment men. No longer is the "buyer" in the middle as to whether paint or equipment is responsible for unsatisfactory results.

Penetray's exclusive ceramic coating improves wavelength, producing more intensive color, thorough curing and superior polymerization on metals. In addition, insect attraction is minimum because glare is reduced and improved uniformity of energy distribution results. Prove these points. Make your own tests for color and gloss; for corrosion and abrasives.

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LEARN TO SAY »PENETRAY«

VERD-A-RAY CORPORATION :: TOLEDO 5, OHIO

HORN *suggests—*

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PORCELAIN LIKE FINISH
NO DISCOLORATION
CLEAR AND IN ANY COLOR
ANY DEGREE OF GLOSS

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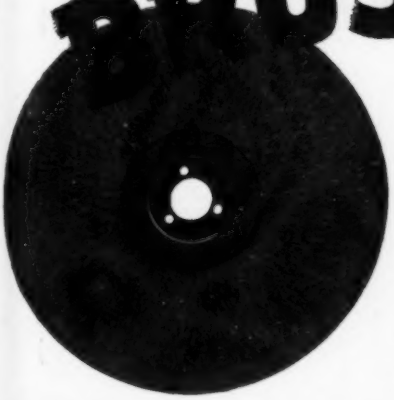
BRUSHES



"PERFECT BALANCE"

ROTARY BRUSHES

Carefully controlled distribution of the brushing stock gives perfect balance and maximum efficiency to these power driven rotary brushes. Wire or fiber. May be used as individual sections or in assemblies.

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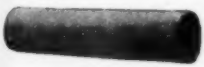

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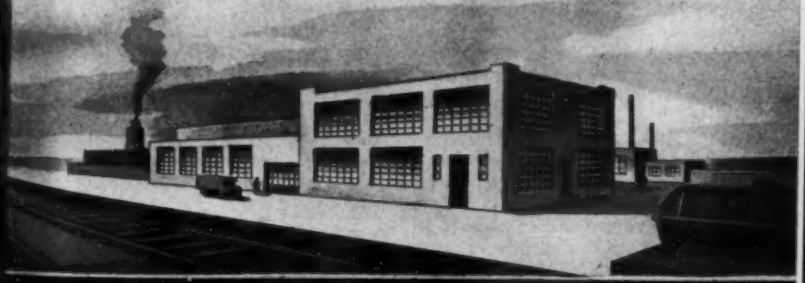

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Conditioning and Coating

BY JAMES CRUM

This mass production setup is designed to efficiently and economically clean, dry and paint the many small parts that go into the construction of Douglas aircraft.

THIS IS the story of what happens to most of the airplane parts that pass through the processing and finishing departments at the huge home plant of Douglas Aircraft Co. Here at Santa Monica, Calif., the famous Douglas 4-engined C-54 troop and supply carriers are being produced in volume and on greatly increased schedules for the Army and Navy transport services.

My visit to Douglas had one definite object: To see the system that receives thousands and thousands of aircraft parts and cleans, paints, dries and sends them on their way to the proper assembly departments without loss of time, loss of parts, or mix-up in the shop orders. Best of all, these parts move through a large and busy department; they move so fast that the overall production schedules are never delayed beyond the calculated time set for any given material to move from raw stock within the plant to the finished part on the assembly line.

It may be said here that the Douglas system of finishing and processing the average standard parts that go into minor and major assemblies, which are brought together to complete the airplane, is considered at this time to be one of the most successful and proven methods of applying protective coatings to aircraft parts. To go into detail, let us take a trip through the department and follow some of these parts through the vast modern "beauty shop" of the airplane plant.

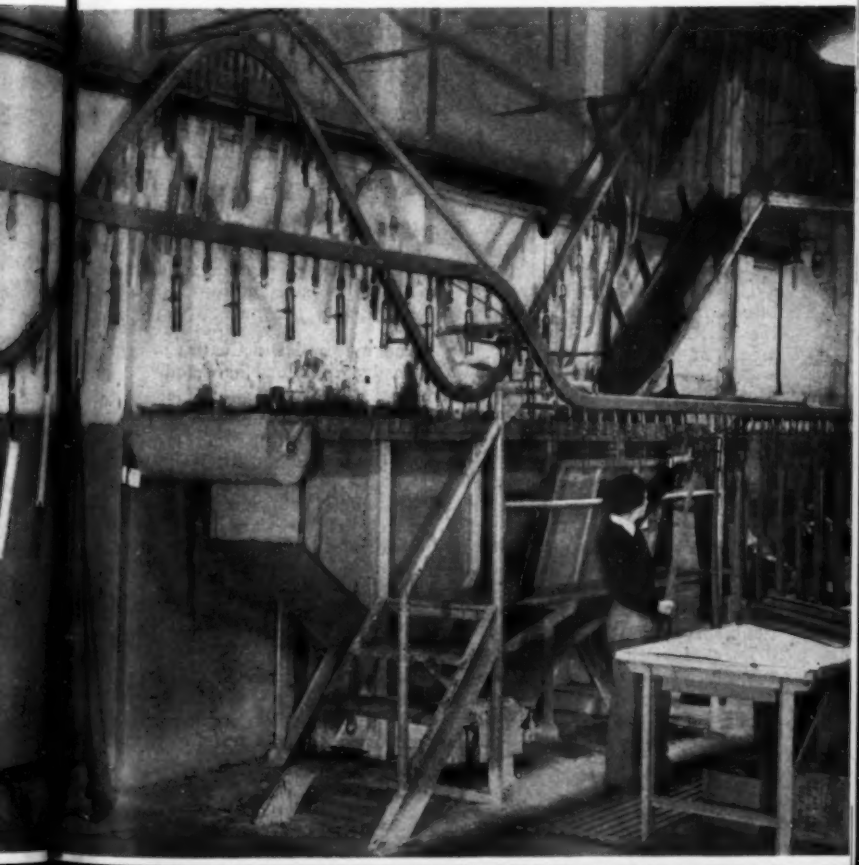
At the receiving or check-in tables all parts are accurately count-

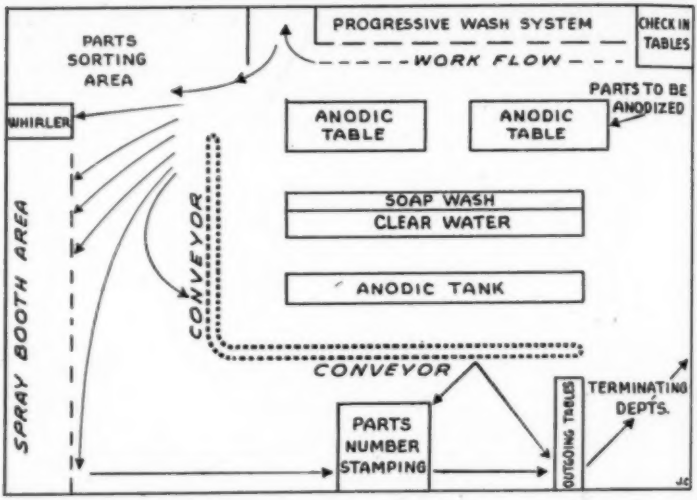
Small Parts for Aircraft

ed, checked and inspected before they start on one of the most important operations of the "beauty treatment" leading up to the processing. This is referred to as the progressive wash system through which all parts must go without fail before any paint or other finishes can be applied.

Parts are placed in large wire-mesh baskets which are electrically controlled and are picked up and lowered into cleaning solutions at the finger touch of the operator. From the tank of cleaning solution, each basket is transferred to a tank containing a very hot soapy solution, which is kept at a specified temperature and in agitation through air-pressure, This second solution washes off any and all dirt, grease, etc., that the previ-

This conveyorized setup automatically dip coats 1560 parts an hour.





This diagram shows the progress of small parts through various operations.

ous bath may have missed. Then, once more up, and then down into a clear tank of clean hot water for a rinse; up and out of this rinse into a huge room-size oven where the parts are quickly dried by means of hot air.

The parts are rechecked and recounted, and shop orders are checked to see what type of finish the cleaned and dried parts shall receive. They are then routed to their respective spray booths, conveyor lines, or whirling machines, depending on their size and other characteristics. Those parts that require what is known as anodic treatment are sent to the anodic tables to be racked for this particular type of finish.

Located in the finishing room is the dip-coating conveyor which is a 210-ft. overhead chain-belt with small hooks spaced 6-in. apart. Parts are fastened to speed hooks for their trip to and through the zinc chromate dip tank. This conveyor system runs at a speed of 13-ft. a minute and dip-coats about 1560 parts per hour.

Conveyorized Dip Coating; Load and Unload by Hand

Coming out of the dip tanks the parts are still carried along to let the excess paint drip off. Then they reach a hot-air oven through which they pass slowly and emerge dry enough to handle. Thus all parts that are hooked to the conveyor system are painted and dried in one continuous movement, untouched by hands except to be hooked on and taken off the belt. As they are taken from the conveyor line the parts are recounted and stamped according to the shop order. They are then ready to be delivered to the proper assembly department.

Other Parts Are Dip-Whirled

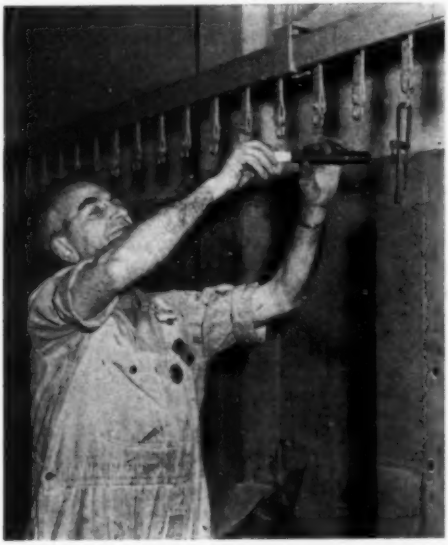
Another phase of mass turnout of small parts, which call for the zinc chromate primer coating, is performed by a paint "whirling machine." The small parts, according to size, are put into a cylindrical basket about 8-in. deep and 18-in. across. The basket is then put into what resembles a washing machine filled with zinc chromate primer. By the erratic rotary spinning method the excess dipped paint is thrown off; at the same time this spinning greatly aids in drying the freshly painted parts. The prime-coating of small parts has been so speeded up by this system that the whirling machine is deemed indispensable.

An estimate of the number of parts going through this system is beyond calculation, because of the difference in the various sizes of the parts being painted. Thousands and thousands of the smaller parts can pass through in a very short period of time. Again, if the parts are larger, fewer of them can be put into the basket for the whirling treatment. After removal from the whirling machine basket, these parts receive the same careful attention that is given to all other finish-painted parts. They are counted, checked and routed to assembly rooms.

Larger Parts Are Spray-Painted in Water-Wash Booths

The larger parts, which cannot readily be coated by dipping or whirling, are moved to individual spray booths for spray painting. All of these booths have the air-conditioning waterfall at the rear of the booth which takes away the overspray, thereby making working conditions within the booth safer and more comfortable for the spray painter.

A former system, which has been practically discarded for newer and faster methods, involved the placing of smaller parts on flat racks, spraying them, waiting for them to dry, turning each one by hand, spraying the other side, and again waiting for them to



Placing shop order in a tube which goes along with the work on conveyor line, through all operations.

dry. This method was slow and costly, and does not compare favorably with the methods now in use.

Stenciling, touch-up work and other special details are handled by skilled workmen in the processing and finishing department.

On the C-54 planes the outside aluminum skin surfaces are not painted. Nearly all parts coming into the finishing department receive a coating of zinc chromate primer, unless they are to be installed in a section of the plane where the part required does not need to be painted. On many planes the modern practice is to omit painting the completed airplane. The only additional painting is done in the cockpits, lavatories and crew quarters. However, some warplanes still receive exterior camouflage painting.

How Shop Orders Are Handled So Efficiently

An important new feature used in connection with the finishing process is that of handling the shop-orders of the parts being painted. Before entering the progressive wash, which is most essential to clean the parts before painting, the shop orders are put into a waterproof, paintproof sealed tube and tied with wire to the parts. Thus the shop order goes wherever the parts go—through the wash, through the painting, and through the drying ovens—it is never separated from the job or lost. This speeds the orders and parts through the surface preparation, painting and paint-drying operations, and on into the assembly departments.

I can recall in the past, before this system was placed in use, seeing stored parts with no place to go, and some shop orders with no parts to be found for them. This new control method of keeping parts and shop orders together is indeed of great value and does away with the loss of time in trying to keep the two together all through the operations.

A rough estimate shows that an everlasting stream of over 800 gallons of zinc chromate primer is used daily at this plant.

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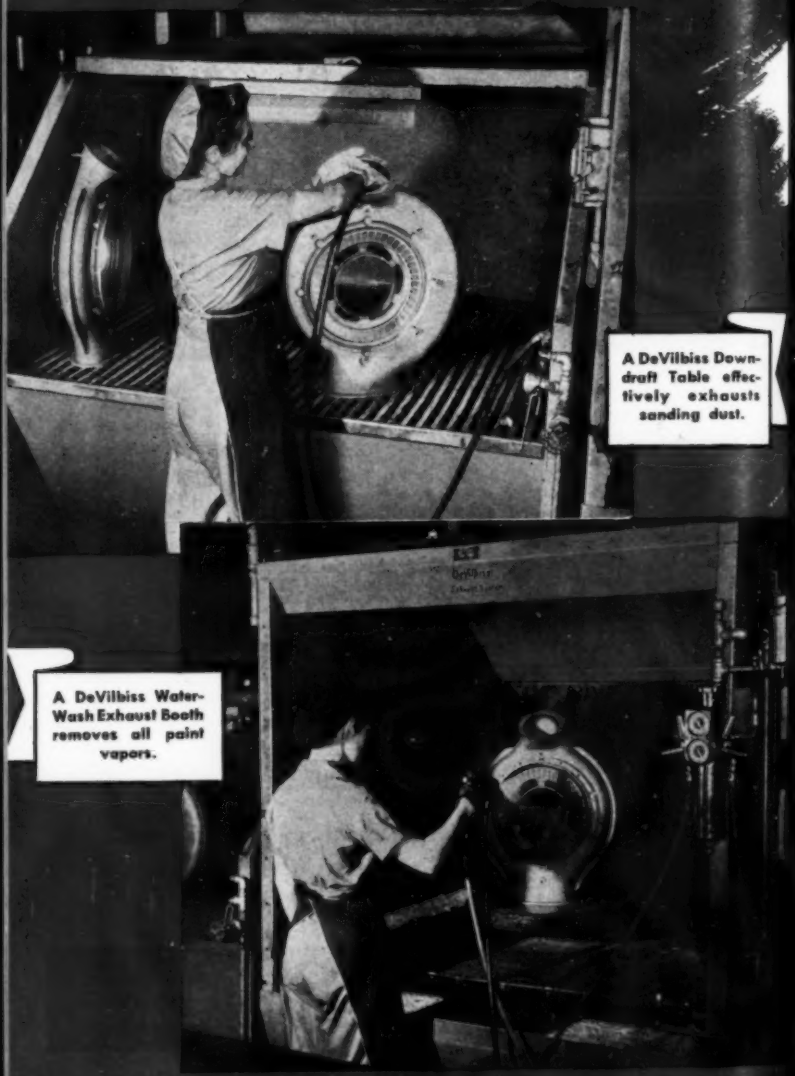

A DeVilbiss Downdraft Table effectively exhausts sanding dust.

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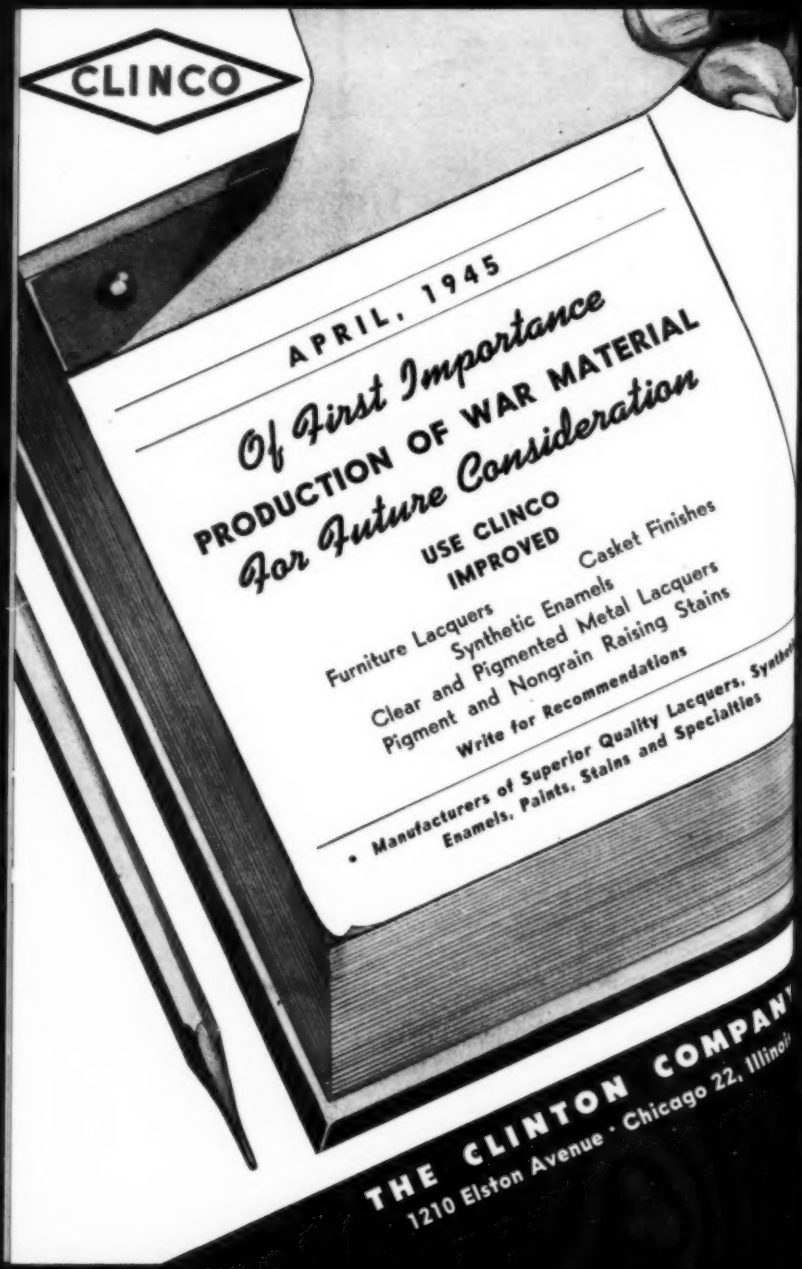
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Bake Finish Troubles: Causes and Remedies

BY J. EMVEE

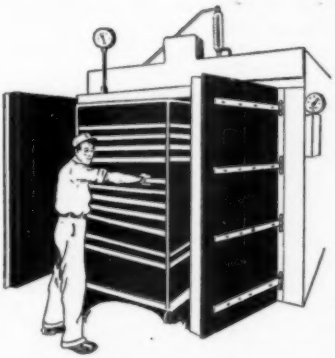
FOUL OVENS sometimes can cause considerable trouble in connection with bake finishing. The following is a typical example:

A company that manufactures metal articles, and finishes them in several colors, had installed a new gas-fired oven. For the job I have in mind, the metal pieces were coated with a blue synthetic enamel. During the first two or three hours of baking with the new oven everything went fine. Then suddenly trouble showed up. The pieces that were coated with the blue synthetic enamel came out either green in color or a mottled blue-green, and the sheen was considerably less glossy than the original blue finish.

This trouble, to the man who has had this experience before, is simple to solve; but to the man who has no idea what causes it, surely he can become worried sick over it.

Off Color Trouble and Loss of Luster

Off-color trouble and loss of luster are generally caused by a foul or stagnant oven. By a foul or stagnant oven I mean that the oven is full of fumes and unburned gasses. Circulation of air is poor and no fresh air is coming in. In the particular case just mentioned I found that the air vents had been closed and that the air circulating system was faulty. As



soon as these conditions were corrected the trouble disappeared and production again got into full full swing, with results entirely satisfactory.

Foul or stagnant ovens can cause other troubles too. They may blow up and catch fire, or they may be the cause of hazy finishes, giving a grayish tone to all colors, including black and white. A foul oven will generally kill or at least lower the gloss of any finish. Adequate circulation of fresh air and an air vent to release excess fumes will overcome the difficulty.

Slight Fouling of Oven Is Desirable for Wrinkle Finish

In some cases a slight fouling of the oven helps to produce the type of finish that is wanted . Wrinkle finishes will wrinkle better when baked in a partially fouled oven. Following is an example: I had been selling a black wrinkle finish to several accounts. It was a wrin-

kle finish that our men were proud of. A company who had been having trouble getting a satisfactory wrinkle finish asked for a sample, which we supplied. Much to our surprise they reported that the wrinkle was not working. It was like all the others they had tried—unsatisfactory.

Upon investigation I found that the oven was heated by steam, with perfect air circulation. The wrinkle finish just wouldn't form perfectly. To prove my theory, I took the same samples that wouldn't work in the steam heated oven and ran them through a gas-fired oven which was adjusted to the job required. Naturally I obtained perfect results. Temperatures were the same in both ovens, but the gas-fired oven could be adjusted to provide what we needed, namely foul air.

Allow Short Air Drying Before Hitting Oven Heat

Another common complaint is pinholing and bubbles on baked finishes. Pinholes and bubbles may be caused by any one or a combination of several conditions, but one of the most common causes is to start to bake too soon after the finish is applied. In the case of a dip-coated job, five to eight minutes should be allowed from the time the work comes out of the dip tank to the time it enters the oven.

If the work has been sprayed, the time may be cut down slightly. This applies especially to synthetic and oil-type finishes. Lacquers may be cut down to a four to five minute initial flash (air drying before entering oven).

The reason for the five to eight minutes of air drying time is to allow a major portion of the solvent to escape before it is so violently forced out of the coating by the high heat. If a coating of paint or enamel does not have most of its solvents evaporated before it hits the high oven heat, several things might occur. The film might "caseharden" at first, and then trapped solvents are forced out later by continued heat, perhaps at higher temperatures. This will cause bubbles in the film. The solvents might come off so rapidly, with the drying taking place at the same time, that pinholes will be formed. In places where the coating might be a little heavy, a "cheesy" or "bubbly" film will show up.

What we ordinarily refer to as "casehardening," is where the film appears to be dry and hard on the surface but is softer underneath, and when dug into it has the appearance of being "cheesy." The use of proper solvents is an important factor when any of these troubles are encountered. Slower evaporating solvents usually give better results, but if they are too slow, sags may occur in the finish.

"Westinghouse Newsfront" Is Free

The first issue of Westinghouse Newsfront, a new monthly publication by the Westinghouse Electric & Mfg. Co., appears this month.

The 4-page report, printed in two colors and illustrated with drawings and photographs, contains short articles describing the latest achievements by the Company in the fields of scientific research, engineering and production. Featured in the first issue are a round-up on the Company's annual report to stockholders, a story on a new application of the Precipitron air-cleaner for the removal of fly-ash, and a picture page illustrating recent Westinghouse developments.

Requests to be placed on the mailing list should be addressed to the Editor, Westinghouse Newsfront, 306 Fourth Ave., Box 1017, Pittsburgh, Penna.

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Plastics AND PLASTIC COATINGS

BY CARL BAUER
Research Chemist
Standard Varnish Works

Paint, lacquer and synthetic protective-decorative coatings that are called "Plastics," and vice versa — all of this has produced no little confusion in the minds of many people both inside and outside of the coatings industry. Here is an article that reveals some of the background and up-to-date facts on this timely subject.

THERE is no word in our dictionary that has been used to denote more various meanings than the term "plastic." Sometimes it is used to convey glamor and sales appeal to a mediocre shelf goods line, while at other times it is applied to the discovery of a research-born organic synthetic chemical. The dictionary defines it as follows: "Plastic means capable of being molded or modeled, such as clay."

In technical language this term covers any number of synthetic resins, regardless of their nature, which are made plastic by the use of heat, and are capable of being molded or shaped. These modern plastics may be divided into two broad classifications:

1) Thermosetting materials, which set or cure with heat and form infusible, insoluble products.

2) Thermoplastic materials, which soften with heat and become solid on cooling, but which can be reheated and reformed.

The development of our plastics industry within the last few years, has contributed many new materials, methods and processes to a variety of industries. There can be no doubt that quite a number of

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these scientific advances have been brought about by ingenuity as well as necessity, caused by lack of raw materials and manpower deficiencies. New properties were found in standard chemicals, and different synthetic compounds were developed which, in turn, provided better and more economical products for many new fields such as textiles, papermakers' chemicals, adhesives and finishing materials.

Plastics Research Has Helped Protective Coatings

This plastic influence is partly responsible for the transition and elevation of the modern protective coating field to an industrial science. The use and application of these chemicals, which were created by research-minded organizations, brought about new concepts and scientific explanations for many unknown factors.

The introduction of technical terms such as "surface tension," "wetting," "polymerization," etc., helped to provide the necessary understanding and definition of the basic principles which are related to adhesion, flow and drying of a paint film. This technical progress enables the technologist today to solve most of the formulating and application problems by correlating the known fundamentals of chemistry, physical chemistry and chemistry engineering.

How and When "Plastic" Got Into Protective Coating Industry

The term "plastic" became a byword in the coating industry with the introduction of high polymer synthetic resins, especially with the appearance of vinyl resins in 1935. The use of plastics for finishing materials, however, originated a long time before that date.

In 1868 the first cellulose nitrate plastic, which is known as celluloid, made its appearance when John Wesley Hyatt produced a billiard ball by molding nitrocellulose plasticized with camphor. This new synthetic plastic, which could be widely modified due to its varied compatibility, formed the basis of our growing lacquer industry in 1919, and ushered in a new era of quick air-drying industrial finishes.

Nitrocellulose proved to be a versatile raw material, that combined many attractive features besides its drying speed, which made it an ideal finish for the automotive industry where it facilitated the adoption of mass production. Within a short period the use of lacquer finishes expanded to nearly every industry and covered all types of surfaces.

Nitrocellulose Lacquer Finishes Expanded to Numerous Industries

This successful introduction of nitrocellulose as a basic ingredient of a protective coating, stimulated research chemists to further exploit the family of cellulose derivatives. The commercial importance of cellulose acetate, ethyl cellulose and the mixed esters of cellulose are proof of the wide range of possibilities of an organic synthetic chemical originated by research.

Most of these compounds are modified for increased utility, regardless of their use as a plastic or as a coating. These different cellulosic materials make it possible to produce a variety of thermoplastic surface coatings with unusual properties — coatings that add beauty and utility to finished products.

The vinyl resins, which are divided into several different chemi-

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cal types, are among the newer thermoplastic synthetics. They possess extreme chemical inertness, acid and alkali-resistance, and produce tough and highly resistant films.

New Plastic Developments Speeded Up by War

The start of the war accelerated plastic research, resulting in a number of new materials and new techniques, many of which are still subject to military censorship. Polystyrene, polyethylene, nylon and acrylic plastics have found wide application for specialty requirements in our war program.

These synthetic chemicals possess a remarkable combination of unusual properties, such as extreme water resistance, inherent fungi resistance, toughness, acid and alkali resistance, and low temperature flexibility. The insolubility of nylon and polyethylene restrict their use as a solution coating, but they can be deposited as a film through new hot application methods.

Thermosetting Type of Plastics; Alkyd Resins and Others

The thermosetting type of plastic also has found wide usefulness as a protective coating. Phenol-formaldehyde resin baking solutions are now applied to produce insoluble, corrosion resistant and chemical resistant finishes for many types of industrial equipment.

The development of alkyd resins provided the industry with a new basic raw material for air-drying and baking coatings, that gave excellent adhesion, hardness, gloss and weather resistance. They proved more economical and tougher than lacquer, especially in metal finishing. Alkyd modified urea and melamine formaldehyde resins were used on refrigerators and washing machines to produce fast curing, high-heat thermosetting enamels. On application they resulted in a non-yellowing, porcelain-like marproof film, which had good heat stability, oil and gasoline resistance, as well as high resistance to humidity and moisture.

Making accelerated tests to find out important facts about the paint film.

Our synthetic rubber program stimulated research work on the possibility of using high-polymer synthetic elastomers for extremely flexible and solvent-resistant coatings. These investigations are carried on now in order to evaluate these new materials for prospective postwar uses.

Hot Dipping; Hot Spraying; Infra-Red Baking, Etc.

The progress made in the plastic and coating industry reflected itself in improved methods of application of protective finishes. Developments resulting in hot dip-

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ping, hot spraying, flame spraying, infra-red baking and muffle furnace curing show a definite trend toward lower application cost and a fast one-coat finishing schedule, similar to plastic molding.

The appearance of new plastics and the discovery of new facts about the older ones, make it difficult for the technologist to keep up-to-date on this subject. Although considerable research has taken place on synthetic resins purely for plastic application, many materials have never been explored completely as to their possibility in the coating field.

The radical changes that are continually taking place, make it imperative, even for the small manufacturer, to emphasize the importance of laboratory work and research in order to provide a sound basis for new business. There can be no doubt that the industry recognizes the full possibilities of the coming "Plastic Age," without exaggerating its importance regarding future developments.

Dip-Coating-Drying Trouble Solved

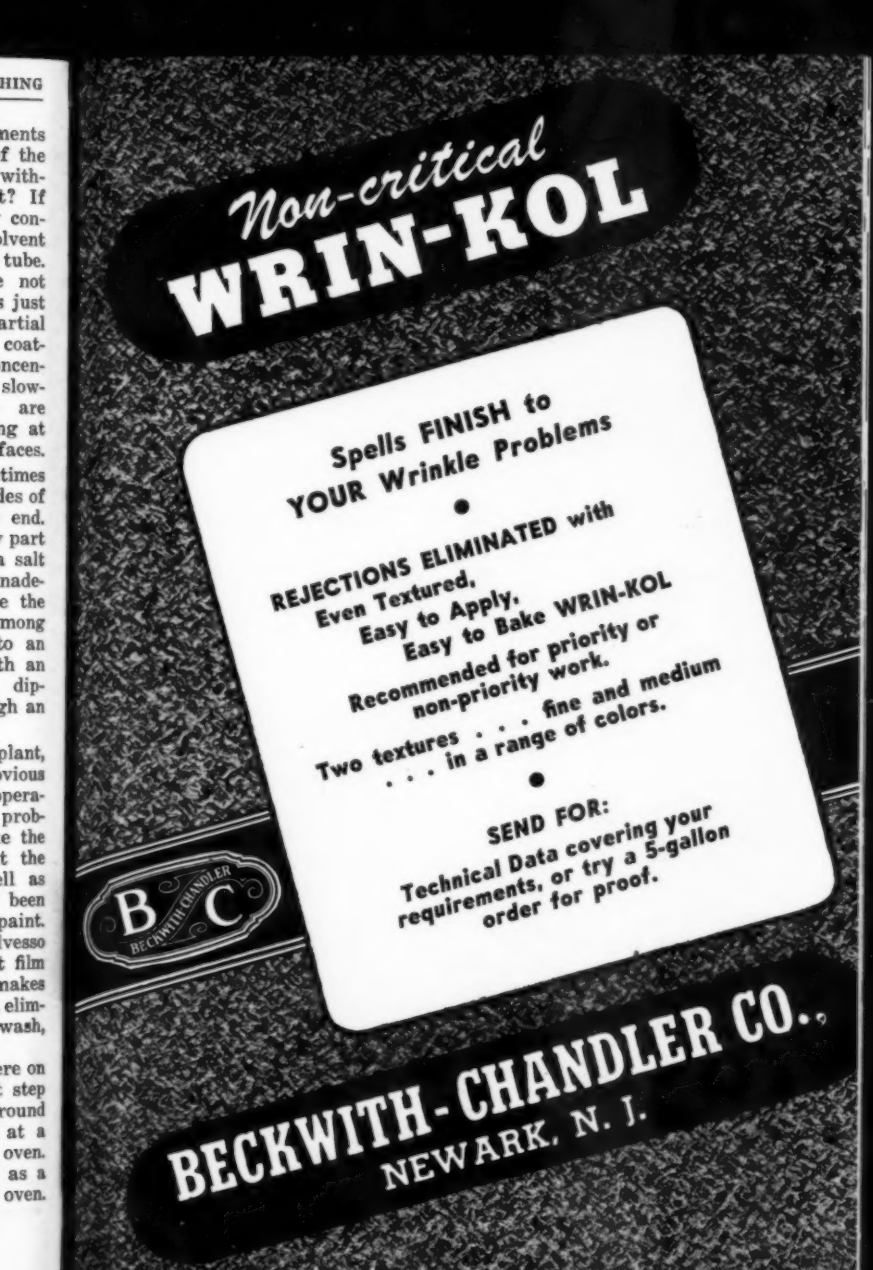
LIFE never ceases to be interesting in the industrial finishing business. New ways of doing a job and plans for lowering costs are continually being worked out. Some are successful while others are not. Rather than accept the opinion of the technicians as final, the right approach, in case someone says, "It can't be done," is to ask: "Have you tried it?" That is the $64.00 question that will bring results.

Have you ever tried dipping a closed-end tube into a highly-pigmented oil-modified alkyd varnish enamel, where the requirements were such that the interior of the tube had to be well covered to withstand a severe salt spray test? If you have, you were probably confronted at some time with "solvent wash" on the inside of the tube. "Solvent wash," if you are not familiar with the term, means just what the words imply — a partial or complete wash-off of the coating material by the heavily concentrated vapors or fumes of slow-evaporating solvents, which are trapped and retained too long at areas close to the coated surfaces.

This is what happens sometimes when you are coating the insides of tubes that are closed at one end. The solvent vapors wash away part of the paint coating so that a salt spray test will show a weak inadequate coating at areas inside the tube. The usual procedure among some concerns is to resort to an inside spraying operation with an extension nozzle, after the dip-coated tubes have been through an oven.

Men in one manufacturing plant, feeling dissatisfied with the obvious wastefulness of this extra operation, decided to work on the problem. Their idea was to make the one dip coat operation paint the tubes properly inside as well as outside. Solvesso No. 2 had been used as a reducer for the paint. They decided to change to Solvesso No. 1, which leaves the paint film more rapidly and thereby makes the paint film set faster. This eliminated part of the solvent wash, but not all of it.

The men knew that they were on the right track so their next step was to build an enclosure around a section of their conveyor at a point before it entered the oven. This enclosure was to serve as a sort of preliminary drying oven.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NEWARK, N. J.

Near the entering end they placed a vertical exhaust pipe. At the midlength and near the exit they placed space heaters, each having a fan to blow heated air over the wet coated tubes and toward the vertical exhaust pipe.

The tubes are carried along horizontally on the conveyor, with their closed ends forward. The entire length of the pre-heating enclosure is 40-ft. The speed of the conveyor is 13-ft. a minute. This gives the parts a 3-minute prebaking. The blasts of warm air past the open end of the dip-coated tubes creates a venturi effect or a partial vacuum which quickly removes the solvent vapors from inside the tubes. This arrangement, plus the change in solvents, solved the problem.

The more rapid evaporation rate of Solvesso No. 1 increased the solvent loss from the dip tank. After the preheating enclosure had been installed, a test was made with Solvesso No. 2, but it didn't work satisfactorily. After all, the company reasoned, the increased use of solvent through its more rapid evaporation, is a small item compared to the extra operation which was eliminated by this change.

As long as paint is used, the manufacturing business will never be drab and uninteresting because when someone says with authority: "It can't be done," another person will turn around and find a way to do it.—GEO. W. OUTCALT.

Polishing Wheel Bulletin

Here is a bulletin that illustrates, describes and outlines the uses of all kinds of polishing wheels such as the many types of muslin, canvas, sheepskin, bull-neck and felt wheels — also special purpose wheels. Bulletin 101 is available on request to The Manderscheid Co., 605 W. Washington St., Chicago 6, Ill.

Cross-bar conveyor and "plastic coater" in operation coating spark plugs with ethyl-cellulose, to protect them. Photo, courtesy of the Youngstown-Miller Co.

Discussion of this timely subject starts with a foreman finisher's note to the Editor. He asks for better lighting in spray booths. Spray booth manufacturers believe in good lighting inside spray booths too, and they provide for it, but it costs more, and some purchasers of this equipment insist upon "saving" money by buying and installing lower-cost, less effective lights.

Spray Booth Lighting

I AM WRITING you on the subject of better lights for spray booths.

I have noticed the ads of leading spray equipment manufacturers in INDUSTRIAL FINISHING, and I see very little improvement along this line.

Probably I have been asleep on this subject. However, the light that I have in mind is the SV fluorescent light which is being used by a small manufacturer of chairs in North Carolina. It seems to me that this is the ideal light for spray booths, as you know that you should have the very best light available for spraying shading stains, especially where you have to match colors such as maple and various other colors by the method of shading with a spray gun.

I have seen one large manufacturing company in the south go so far as to have windows cut in the roof in order to get more and better light, but even this did not help the situation.

Spot Lights Are Undesirable; Uniform Lighting Preferred

Now, the fault that I find with the present spray booth lights is that they give you a spot effect—more like a spotlight—whereas the other light mentioned gives you a more uniform light; more like daylight.

This particular light mentioned may not come up to the approval of Underwriters Laboratories; and maybe it is dangerous to use, but I still contend that it can be made to meet any reasonable safety requirements.

If this is an idea, you may use it as you see fit.

Spray booth people believe in good lighting too. Photo, The DeVilbiss Co.

Thank you for the opportunity of writing this letter and being able to read INDUSTRIAL FINISHING Magazine.—L. G. FARMER, Foreman Finisher.

EDITOR'S NOTE: Copies of your letter have been referred to leading spray booth manufacturers and some of them have sent us several typical photographs of well lighted spray booths, along with the following letters, which are in reply to your plea for better lighting in spray booths. We all agree that spray booths should be well lighted so that spray operators can readily see what they are doing, and do it satisfactorily without eye strain.

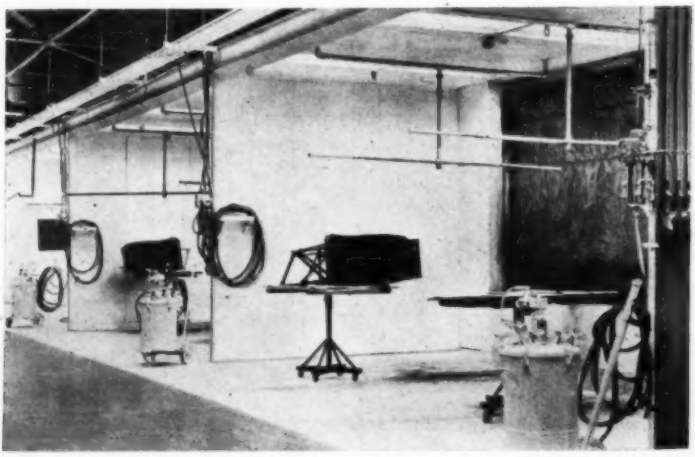
Spray booth manufacturers prefer to supply what it takes to light spray booths perfectly, but men who buy the equipment (and who don't work in spray booths) discover an opportunity to cut the cost of an installation by going to cheaper lighting, and sometimes this is just what they do. (Letters follow.)

WE ARE glad of the opportunity . . . . to make some comment on lighting spray booths.

As you will observe from the photographs of several of our spray booth installations, lighting has been given very careful consideration. Sometimes its cost represents a good share of our customers' investment in exhaust equipment. However, in every case where we are given the complete responsibility of engineering the installation, we are just as careful and technically correct in providing for illumination as we are in any other detail.

Lighting Must Be Designed to Suit Products and Conditions

Because of the size and shape of products being painted or finished, and the operating conditions



Typical example of modern spray booth lighting. Photo, The DeVilbiss Co.

THE PRIMER THAT *FLOWS BACKWARD*

O'Brien's Gray Primer 7062 eliminates beading on the edge of the object being dipped. This unusual baking primer actually "flows backward" after draining, levelling out to a smooth, clean surface. A stand-out performer under lacquer, synthetic enamels and government specification finishes. Non-skinning, non-settling, extremely stable in the dip tank. Applied film is flexible, durable and salt-resistant. Write us for this primer's outstanding record.

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NOT THE MOST – JUST THE BEST

within the booth, there can be no real standard installation of lights which will give adequate and safe illumination in all cases. The photographs will show you a variety of methods employed.

We agree that many spray booths are inadequately and inefficiently illuminated, but this is not the fault of the spray booth manufacturer. It comes from the user's preference to purchase his lighting independently of the installation. Often, with the objective of mistaken economy, the spray booth manufacturer's lighting recommendations are not accepted. Instead of calling in a lighting engineer, lights are purchased on the basis of their lower cost and easier installation.

Great progress has been made in industrial illumination during the past several years. During this period our spray booth engineers have worked closely with the lighting engineers of the large electrical manufacturers. We have taken advantage of every new development (some of which have come from our suggestions) in the adequate illumination of the exhaust systems we engineer and the lighting equipment we recommend for use with our standard stock booths.—THE DEVILBISS CO.

WE ARE, indeed, interested in Mr. Farmer's letter. We have been using fluorescent lights in spray booth installations since 1940, when we made our first large installation in a 100-ft. long automobile spray booth.

We agree with Mr. Farmer that for spray booth lighting there is no comparison between fluorescent lamps and the candescent type. However, the price on fluorescent fixtures is about five times that of the candescent lights, and it is not possible in all cases to induce

(Continued on page 57)

Two modern spray booths of different design; both are well lighted for the spray operators. Both pictures from the Binks Manufacturing Co.

...but not into plywood protected by Sealer No. 30

In many instances, adverse climatic conditions harass our Armed Forces even more so than the enemy. Nowhere is this more pronounced than in the steamy, moisture-laden tropics, referred to in the illustrated V-Mail letter. But even there—as in every other part of the world—Sealer No. 30 affords plywood equipment *complete protection against moisture.*

MOISTURE REPELLENT SEALER No. 30

This remarkable sealer not only covers the plywood, *it actually penetrates into the pores*—producing a deep, dependable seal. Expansion, contraction or stress cannot affect this moisture-proof barrier because Sealer No. 30 virtually becomes a part of the wood itself.

No. 30 provides an excellent bond for the finishing coat. And it's perfectly at home on any assembly line, for it's easy to handle—can be sprayed, dipped or brushed, with the same excellent results.

If plywood figures in your present or postwar production, ask us for complete facts about Sealer No. 30. Literature on request.

Conforms with Specification AN-S-17

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USE V . . . . MAIL

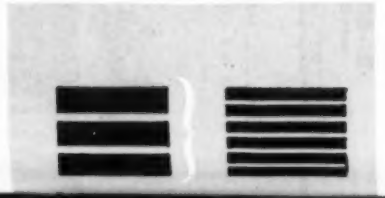
It's faster and saves valuable cargo space.

MURPHY *Protective* COATINGS

Here's How HIGH-SOLIDS Lacquers Cut Finishing Costs

It's not the cost per gallon that determines finishing costs—more important to consider is the finishing cost per unit!

High-solids lacquers mean thicker, fewer coats and many other savings that cut production costs drastically. Here's how:



quers deposit thicker films at spraying viscosity, giving you

with high-solids lacquers. The fewer number of coats, the

lacquers by any of the usual commercial methods . . . spray-

quers deposit thicker films at spraying viscosity, giving you the same finish with fewer coats.

with high-solids lacquers. The fewer number of coats, the smaller the area needed for finishing and work in process.

lacquers by any of the usual commercial methods . . . spraying, flow-coating, tumbling, dipping, or roller-coating.

Nitrocellulose lacquers are still the fastest-drying finish . . . in minutes at room temperature. No expensive baking equipment is needed.

One of lacquers' biggest advantages is the ease with which any scratches or imperfections in the finish can be retouched or repaired.

Ask your supplier for complete details. Hercules makes no lacquers . . . concentrates on production of highest-quality nitrocellulose.

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Announcing

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**IE NEW MATERIAL WHICH MAKES
)R QUICK EASY CLEANING OF
SPRAY BOOTH WALLS**

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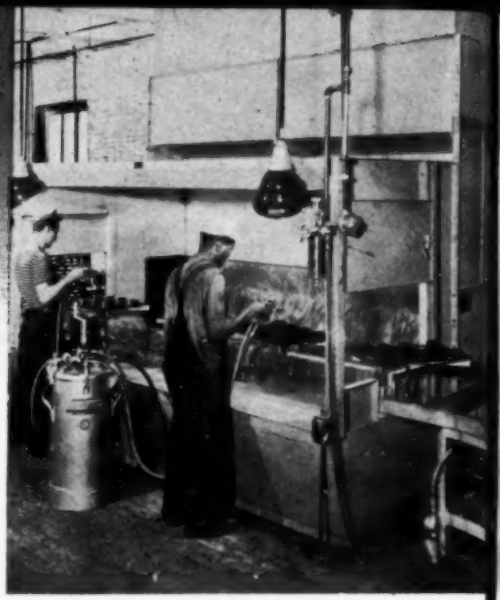
e sidewalls of spray booths which
ermits easy removal of paint over
pray. A coat of Triad PR cuts cleanup
me to minutes—reduces mainte
ance costs to a new low



✓Check THESE ADVANTAGES ·

- ✓ Readily applied with brush or spray gun; gives excellent coverage.
- ✓ Dries to a hard, white, dustless coating; improves visibility in the booth.
- ✓ Quickly washed off with water or steam, carrying all surface deposits with it.
- ✓ GUARANTEED PERFORMANCE: As with the entire line of Triad alkali cleaners, PR is shipped on a guaranteed performance basis for thorough testing in your equipment.

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DETREX CORPORATION

13019 HILLVIEW AVE., DETROIT 27, MICHIGAN

the prospective customer to spend this additional money for proper lighting.

Then too, there is a question of a hazard with the fluorescent light, inasmuch as no really explosion-proof fixture of this type has as yet been put on the market. The nearest to it is one known as the holophane unit. It is obvious that in addition to electric connections that have to be made to this light, it is necessary to run an air line. The light is very expensive and requires an expensive installation.

We do recommend fluorescent fixtures wherever possible, as they not only provide better lighting, but provide a neater appearance in the booth.—BINKS MFG. CO.

Finishing Dolls

IN March 1945 issue, I notice someone requested information about finishing dolls (see "Letters from Readers," page 7). Perhaps the following data will be helpful:

The most common type of doll is molded of a composition consisting of wood flour, glue, pigment, etc. Heads, arms, legs and body are molded separately. Each part is usually molded in halves, which are then glued together. The finished part is dipped in a glue size, to which suitable pigment has been added to give a sort of flesh color. This serves as a base for succeeding finish coats.

For cheaper dolls one coat of a nitrocellulose lacquer of the proper color is applied over the glue size. This lacquer must be of high viscosity, much higher than is generally used for dipping. Decorations, eyes, eye-lashes, lips, hair, etc., are then added with a small touch-up spray gun.

For higher priced dolls, a final coat of finishing lacquer is sprayed on. When this is done, it is customary to touch up the cheeks and chin with a very thin coat of bleeding-type lacquer — one that will bleed into the final coat of flesh-colored lacquer to give the desired pink cheeks, etc.

Each coat of flesh-colored lacquer should be allowed to dry eight hours, because each coat is rather thick and time is required for the solvent to evaporate.

By way of caution, the red pigment used to produce the flesh color of the finishing lacquer must be a permanent color. Toluidine, lithols, etc., are unsuitable, as strong light will destroy their color quickly. Cadmium colors are most suitable for the purpose, although any reliable dry color manufacturer could perhaps recommend others.—H. H.

Shellac Bulletins

Two new 4-page bulletins about shellac have been released by William Zinsser & Co., 516 W. 59th St., New York, N. Y.; or 319 N. Western Ave., Chicago, Ill. Interesting facts are given about this versatile material.

Consulting Chemists; Chemical Engineers

A completely revised edition of the Foster D. Snell, Inc., brochure under the heading "The Consulting Chemist and Your Business" is recently off the press. Copies are obtainable without charge from the above named company at 305 Washington St., Brooklyn 1, N. Y.

Following a brief outline of the type of business enterprise which finds continual or occasional use for the services of consulting chemists, the booklet deals with the various branches of service offered. Photographs illustrative of certain phases of work done by the organization are included. The booklet states the corporation policy in relation to clients, the basis of charges and the types of agreements which are offered.

Viscosity of Material Affects Dip Coating

Regardless of whether your method of product painting is spraying, dipping, flo-coating, roller coating or tumbling, the viscosity of the paint, lacquer or varnish must be "right," and this viscosity should be checked regularly to keep it uniform throughout the day.

BY KARL M. SCHAAF

SUCCESS in applying paint, varnish or lacquer to various products by dipping depends, to considerable extent, upon having the coating material at just the right viscosity—and keeping it at that viscosity. Variations in viscosity will certainly produce noticeable variations in quality of your paint-dipping or varnish-dipping.

Take, for instance, in the summertime when so many factories don't need and don't have artificial heat. On many a bright morning I have seen a dip-coated finish start out perfectly, but toward noon, as the sun's heat became more intense and really raised the temperature of air and everything else in the factory, the finishing job by dip coating became more or less unsatisfactory. The finish would look skimpy, after the excess material had drained off and the remaining film had dried.

No one had altered the contents of the dip tank in any way; yet as noon time and mid-afternoon approached, the finished surfaces showed that film thickness had decreased from what it had been earlier in the day.

On the other hand, during the winter months, when we come to work the temperature in our finishing room may range anywhere from 72° to 80°F.—if we are in a well heated building and if the night watchman or fireman has been on the job. However, as the day progresses, the spray booth exhaust fans pull such a large volume of warm air from the building that it may be next to impossible for the heating plant to keep the temperature in the finishing rooms up to, say 72°F.

Variations in Temperature; Variations in Viscosity

Any drop of a few degrees in room temperature will affect material in the dip tanks. Its viscosity changes. As a result, sags, runs and fatty edges may begin to show up in the finish. This is exactly the opposite of what occurs during the summertime when the building and dip tanks of material become warmer as the day progresses. Then, if it isn't readjusted, the finishing material becomes thinner and will run off the dipped surface so fast that little of it remains as a real coating.

This tendency of finishing materials to change in viscosity as the room temperature changes—and with little if any advance notice—almost forced us to give up the practice of dipping our products, particularly those that

Artisan FINE FINISHES

Confidence in knowing that the finish you use to bring out all the beauty and craftsmanship in your quality furniture will perform as you expect it to in production and in actual use, is just one of the benefits you'll get with Artisan Fine Finishes. Developed and formulated to meet each manufacturer's specific problems, these dependable long-lasting finishes give the consistent, unvarying service that you are entitled to expect. An America-Marietta technician will gladly work with you to obtain improvements in finishing methods—or in producing finishes with greater eye and sales appeal.

AMERICAN-MARIETTA COMPANY

Marietta, Ohio Chicago, Illinois High Point, N. C.

A-M

take a coating of varnish. A lot of our work was rejected by the inspection department, because there was too much or too little varnish on the surfaces.

We decided to do something about it. It was apparent that room temperature changes caused the variations in viscosity of our material. It wasn't practicable for us to keep our room temperature uniform throughout the working day. Then why not, we reasoned, try to control the viscosity of material in our dip tanks by making viscosity tests and readjustments, if necessary, at regular intervals during the day? The tests would indicate whether the material in the dip tank should be either built up by adding straight varnish, paint or enamel —or thinned by adding a suitable solvent reducer.

Keep Viscosity of Material Uniform by Readjustments

We discussed the problem with our paint supplier. The company assured us that this procedure should give us reasonably accurate control of the material at all times and not impair the quality of the finish. Our paint supplier also suggested that we buy a viscosity cup, or have one made by a local machine shop.

Viscosity cups have been illustrated repeatedly in past issues of this magazine, so I assume that most readers are familiar with them. Ours is about 2-in. in diameter, 2¼-in. deep, and has about a 1/32-in. hole centered in its down-curved bottom. It also has a looped handle which allows one to submerge it into the material and withdraw it.

We generally measure viscosity of materials by the following procedure: Hold the viscosity cup perfectly level above some suitable container. Place one finger over the small hole at bottom of cup. Pour in enough material (a typical sample) to make the cup just level full. Use a stop watch and set it to begin ticking off the seconds (or fractions of a minute) the instant you remove your finger from closing the hole at the bottom of the cup.

How We Measure Viscosity of Material

When the stream of paint quits flowing, stop the watch and note the number of seconds that have elapsed. Your basis of comparison is the elapsed time (in seconds) for material of pre-determined correct viscosity to flow out of the cup. Naturally, "thinner" material will flow from the cup more rapidly (in fewer seconds), while "thicker" material will flow from the cup more slowly (requiring more seconds).

In order to determine how many seconds is required for the material to go through the cup when that material is in its best condition for a satisfactory coating job, we tested each tank of material several times a day for several days. A notation of each reading was attached to a rack of parts that had been coated while the paint or varnish was at the viscosity reading shown by the cup test. Later, when we found racks of products that were coated with the best and most attractive finish, the viscosity reading of material in the tank when they were dipped was established as a standard. A chart showing what the reading at the stop watch should be when the material is at peak efficiency, was prepared and hung on the rail next to the dip tank. For example, if a sample of varnish required 66 seconds to run through the viscosity cup, and if the varnish

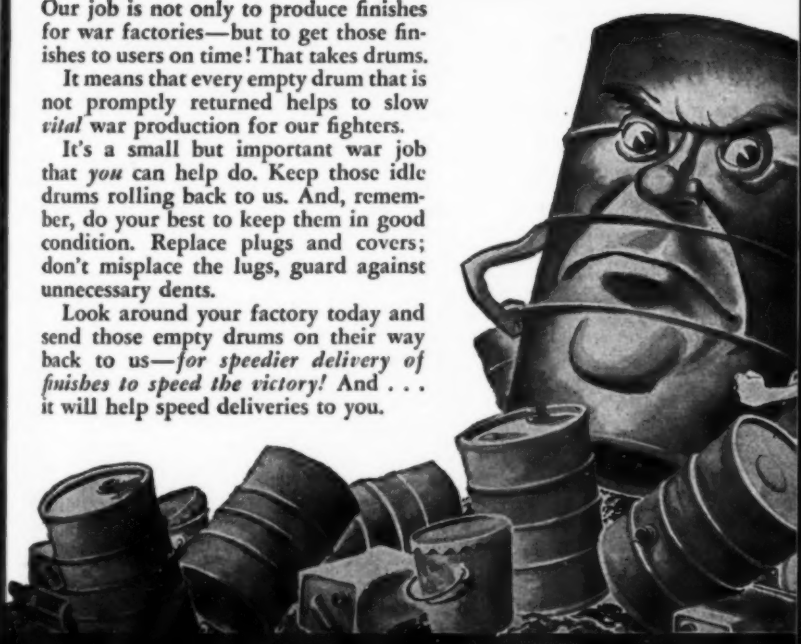
Calling All Drums ... for Victory!

Our job is not only to produce finishes for war factories—but to get those finishes to users on time! That takes drums.

It means that every empty drum that is not promptly returned helps to slow *vital* war production for our fighters.

It's a small but important war job that *you* can help do. Keep those idle drums rolling back to us. And, remember, do your best to keep them in good condition. Replace plugs and covers; don't misplace the lugs, guard against unnecessary dents.

Look around your factory today and send those empty drums on their way back to us—*for speedier delivery of finishes to speed the victory!* And . . . it will help speed deliveries to you.



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ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. Western Sales: No. Chicago, Ill.

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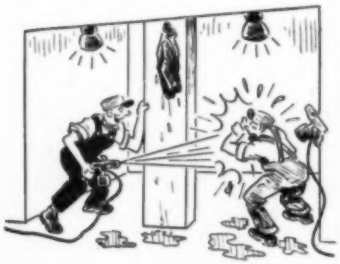
gave best results at that reading, then 66 seconds was the viscosity at which we attempted to hold material in that tank.

Every two hours during the day, the contents of each tank is tested and a recording is made on the chart. Any variation between the actual viscosity reading and our established standard viscosity, is corrected by either adding a quantity of unreduced material, or solvent, according to which is required. In this way we control our viscosity perfectly and have no more trouble with sags, runs, fatty edges or skimpy finishes.

Frolics in the Finishing Room

A PAINFUL and exasperating experience at the time, but one to look back to now with amusement, occurred in our plant about two years ago. Two spray painters under my supervision worked in a double paint booth. For some time they had acquired the habit of playfully squirting each other with paint occasionally. They did it by the simple method of pinching the air hose to their guns, and then pulling the trigger.

Finally taking them to task about the matter, I pointed out to them in a nice way that they were not only wasting company time and material, but were lowering the morale of our department. They promised faithfully that it would not happen again, and for quite some time they kept their word.



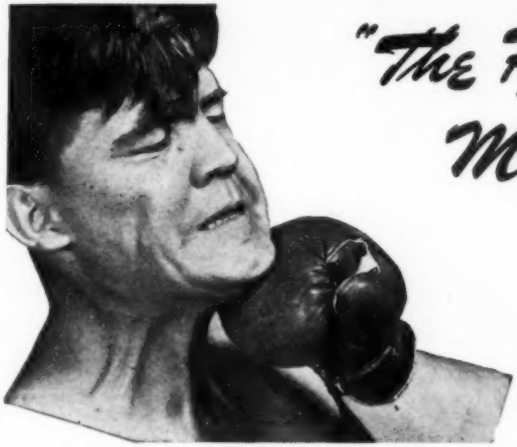
The spray painters' last fight.

One day bedlam really broke loose. Joe happened to glance over and saw his partner, Don, in a position that made Joe's finger itch and quiver on the trigger. Don had stooped over momentarily, presenting his posterior portions very temptingly. Unable to restrain himself, Joe let him have it.

The perfect target was subjected to a heavy splashing shot of paint. Straightening up quickly, Don retaliated with a blast that caught Joe squarely along the side of his face and neck. In the center of the booth was a large wooden column, where I sometimes hung my leather jacket; unfortunately it was hanging there on this particular day. The men maneuvered to keep this column between them, and both the column and my jacket were caught in the cross fire.

Right in the heat of their battle I happened to come along. Well I wasn't in any mood to joke or laugh or appreciate this kind of wasteful contest, and I showed it promptly. The battle stopped immediately, and what a spectacle. Two shamefaced men, dripping with paint from all points — and my prize jacket dripping paint too.

I had great difficulty in restraining my natural inclinations. I persuaded the men — and not too gently — to work overtime, without remuneration, dry-cleaning themselves, the booth, and also my jacket. One thing I can vouch for: That was the last gun battle in my department — to date!—DALE W. MUSSELMAN.



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Elizabeth, New Jersey
MODERN PRODUCTION FINISHES

One of the many tests that high solids lacquers undergo is the one that determines the hiding power of the lacquer. The lacquer is sprayed or brushed on a black and white panel.

These lacquers are available in clears and pigmented, and can be applied at room temperature or by hot spraying.

High Solids Lacquers

BY JAMES R. YEAGER
Supervisor, Lacquer Marketing Sect.
Cellulose Products Department
Hercules Powder Company

DEVELOPMENT of new high-solids nitrocellulose lacquer finishes of improved quality, which appreciably reduce the finishing cost per unit, is indicated by tests now underway in lacquer manufacturers' laboratories and in the Research Department of Hercules Powder Co.

These tests show that clear lacquers for indoor use can be developed having a solids content of 30% to 35% when sprayed at room temperature. Similar pigmented lacquers for outdoor use can be sprayed at slightly higher solids, depending upon the pigment used.

How High-Solids Content Is Accomplished

The high solids content is accomplished by the proper selection of nitrocellulose and resins and the use of solvents having more solvent or dissolving power. An equal or greater increase in solids content is possible through the application of the lacquer by the hot spray method.

The benefits of the hot spray may be added to the benefits of formulation with the proper adjustment of solvents. Basic information on the new high-solids lacquers was obtained from tests on clear lacquers. The best of these lacquers were then used to formulate wood furniture finishes and pigmented metal lacquers.

The reduction in cost is obtained through a saving in solvents, a reduction of the number of coats required and a saving in application costs. Tests showed that the cost of solvents required to deposit one pound of solid film upon an article may be cut in half by the proper use of solvents, nitrocellulose, and temperature of application.

The new high-solids lacquers may be used in exactly the same

VITA-VAR METAL FINISHES

PROTECT in war as in peace!

TODAY, Vita-Var Product Finishes protect equipment, vehicles and armament used by the Armed Forces. Today, we can take care of your requirements of finishes for the Armed Forces.

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Write for the Vita-Var Product Finishes Folder on metal, wood and other finishes.

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way as previous lacquers. However, since the solids content is higher, the number of coats required is decreased. In some cases the number of coats may be cut in half without any sacrifice in quality.

These advantages in higher solids content are added to all the previously known qualities of nitrocellulose lacquers. At the end of six months' exposure on test fences in Miami, Florida, and Wilmington, Delaware, pigmented lacquers appear to be superior to the better prewar metal lacquers. These fence tests are being continued.

Lacquer a Versatile Finish; Useful on Many Products

Nitrocellulose lacquers have been recognized for many years as a quality finish by the furniture, automotive, and other finishing industries, because they satisfy exacting industrial requirements and add to the "eye appeal."

Their toughness and durability, ease and speed of application, drying speed, print and mar resistance, range of colors, richness and depth, and the ease with which nitrocellulose lacquer finishes can be touched up are highly regarded qualities in the finishing industry.

Lacquer has proved itself a very versatile finish. It may be produced in a clear or any delicate shade or color. It may be formulated to be hard or soft, dull or glossy, brittle or elastic, and it may be used as a heavy coat or easily thinned to any degree.

Lacquer Air Dries Quickly; Finish Easy to Repair

The speed with which nitrocellulose lacquer can be applied and its quick drying qualities make it possible to apply several coats in a comparatively small amount of space and time. This space, time, and equipment are further reduced by the higher solids lacquers.

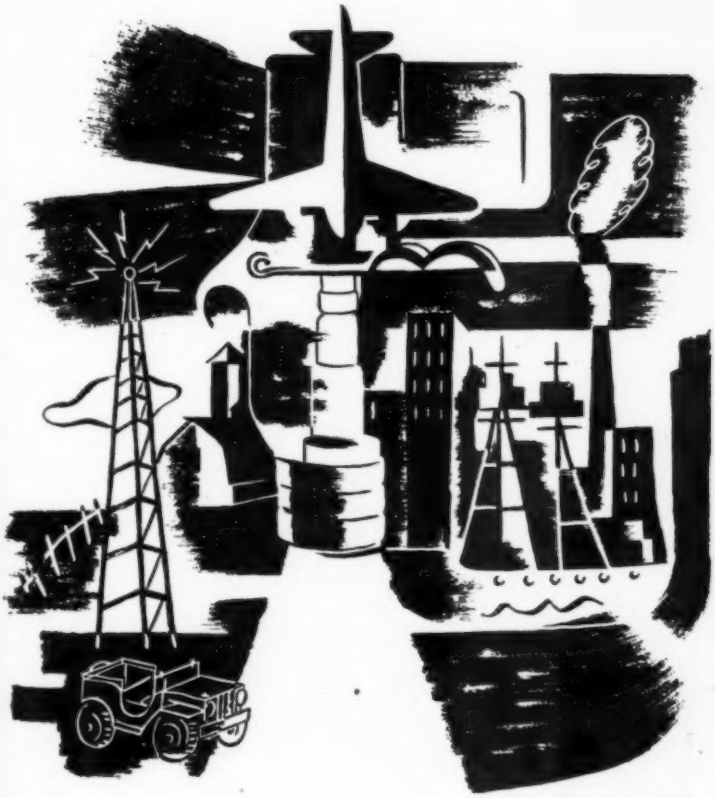
The quick air dry, inherent in the use of nitrocellulose lacquers, is a decided asset in both the metal and wood finishes field. It reduces the possibility of dust and lint pick-up and makes it possible to handle the articles more quickly. The simplicity of application also removes the need of long training periods for new help.

Another advantage of a lacquer finish is the low rejection rate. If any mistake has been made along the line, either in the type of lacquer used or its application, the mistake can be discovered and easily corrected before the article leaves the factory for storage or show room. If any damage occurs during shipping, the article can be easily repaired by the dealer, thus eliminating the necessity of returning such articles to the plant for refinishing.

An Important Postwar Finish

To the manufacturer who is preparing for a big postwar business, quality and beauty of finish, cost of applying the finish, and floor space and equipment necessary for application are important factors to be considered in deciding what kind of finish is to be used.

The new high-solids lacquers, still possessing all the old qualities, coupled with new developments in the equipment for spraying hot lacquer, which make it possible to control more accurately the temperature of the lacquer at the gun, are expected to play an important role in the postwar finish market.



stille-young *finishes protect*

anywhere, everywhere, and keep war equipment ready for any emergency

The reputation of Stille-Young finishing materials has been confirmed and increased by our production in war.

The post-war period promises new products and even greater performance.

stille-young

manufacturers • **lacquers, fillers, stains, enamels, paints**

Chicago 14

DEPEND ON DU PONT

YOU CAN ALWAYS depend on Du Pont paints . . . if you have a wartime finishing problem . . . *and* if you're doing your postwar planning now.

For the former, Du Pont finish engineers and the Du Pont Research Laboratories are solving hundreds of wartime problems. They find and break bottlenecks—diagnose and cure faulty finishes—speed up a plant's output.

If you're tomorrow-minded, you can depend on Du Pont—the company which perfected such world-famous finishes as DUCO and DULUX—to supply the superior finishes which you will want for that finer product of the future.

Call on Du Pont for war service. Call on us, too, if a postwar product is on your mind (and it doesn't interfere with the war effort).

E. I. du Pont de Nemours & Company (Inc.), Finishes Division, Wilmington 98, Delaware.

DU PONT

FINISHES DIVISION

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

DU PONT

Infra-Red PAINT DRYING *With Gas*

BY WILLIAM H. TESMER
Chief Engineer, Burdett Mfg. Co.

Sensitive heat-measuring equipment permits highly responsive control.

COMPARISONS of lamp and refractory-type burners for heating and processing have been limited. Both methods have definite merits and both strive for the same results. Yet certain factors have to be recognized and acknowledged to obtain all the advantages in each.

The infra-red lamp (electrical) has advantages in portability for large unit production, especially where mobility of the product being processed is impractical or inconvenient. Highly volatile substances, such as cellulose, demand lamp drying because of danger of open combustion.

The infra-red gas burner, using the Burdett principle with applied circulating heat, permits altering the paint drying time or cycle. This advantage makes it unnecessary to reformulate the paint. When infra-red gas burners are employed, the drying cycle is not materially affected by the color of the paints nor are short cycles created by highly reflected surfaces, such as chrome bumpers with inscribed painted letters.

Before going into detailed discussion of infra-red paint drying with refractory-type burners, the importance of extremely sensitive measuring equipment and the overall advantages of highly responsive control should be emphasized. Tests made by engineers of Brown Instrument Co., and verified by our own staff, have demonstrated that Brown electronic potentiometers with air-operated control have made processing more economical, decreased rework and speeded operations. The value of precise industrial instruments will be apparent later.

Features of Infra-Red Gas Burner Heating

When employed with a recirculating system the infra-red gas burner offers definite fuel economy —sometimes as much as 50% lower fuel cost. It will equal or better production speed when compared with indirect-fired equipment.

Infra-red gas burners will dry the inside finish of ammunition and similar metal chests with equal speed and thoroughness as outside

Protective . . .

Decorative . . .

Attractive . . .

WRINK-ALL

MADE from non-critical materials in fine, medium or course texture. A proven product that has received wide acceptance by manufacturers everywhere.

WRINK-ALL has all the characteristics of old type wrinkle in appearance, uniformity, application, baking schedules, etc. Works well under severe conditions in foul ovens. It is available in all shades and colors, and in unlimited quantities for immediate delivery.

NO PRIORITY REQUIRED

[*Order 5 gallons of Wrink-All today and give it a severe production test.*]

LACQUERS—THINNERS
METALLIZED FINISHES
SYNTHETICS AND
SPECIAL COATINGS
FOR ALL SURFACES

United Lacquer Mfg. Corp

General Offices, Laboratory, Factory: LINDEN, N. J.

NEW ENGLAND MFG. DIVISION, EVERETT, MASS.

BACK THE ATTACK! BUY WAR BONDS!

drying. Similarly, square, round and off-shaped objects of varying thicknesses can be run simultaneously without change of speed or temperature.

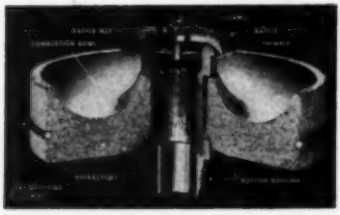
An infra-red gas burner paint drying oven is in no way limited to specific sizes or shapes of the object to be processed, nor is it necessary to mount burners to focus the infra-red radiation to completely cover a painted object.

A typical example of infra-red gas burner performance is in operation in Grand Rapids. The oven there has been operated for approximately two years without requiring maintenance. This included Sundays and holidays.

This oven, originally constructed to meet specific requirements, was indirect-fired before conversion. It measured 180-ft. long and had a floor conveyor that traveled 24-in. a minute. Paints were formulated for a cycle of 1½ hours at 300° F.

Baking Schedules Varied to Suit Different Conditions

Conversion of this oven to employ infra-red gas burners made it possible to reduce the overall length to 80-ft., including a 10-ft. vestibule air seal at each end. Two overhead monorail conveyors, traveling in opposite directions, were added; each has a top speed of 10-ft. a minute and low speed of 8-ft. a minute. They operate 9-ft. a minute normally. The floor conveyor for very heavy products travels 10 to 14-ft. a minute. This oven employs four manifolds, each 25-ft. long — two manifolds on each side of the oven occupying 50-ft. in length.



Sectional and perspective view of Burdett radiant-heat gas-burner head.

Flexibility of Oven

It is not possible to obtain greater flexibility than is found in this oven. It will handle anything within the scope of the annual production of this plant from 150° to 450° F. Any necessary temperture change, up or down, can be accomplished in seven minutes, permitting a complete paint change within that period without stopping production. The company has also found that it can run wood parts with the same ease and excellent results as steel and aluminum parts.

The conveyor speed will not permit the curing cycle to be longer than 6¼ minutes in the heat zone or 10 minutes overall, compared to the 1½ hours formerly required. The original paint formula, as perfected for the old method of production, is still used.

Production That Includes a Variety of Products

Production of this plant is highly flexible. It includes bomb fins, other aircraft products, plywood and oak seats, radiator core housings, automobile fenders, fender brackets, radiator shells and a range of hardware items. Total weight run through the oven equals 46,375-lbs. an hour. The company has never experienced any temperature drop, regardless of size or kind of load. This manufacturer states that he has been

(Continued on page 76)

This MAHON finishing SYSTEM

Completely Processes

ENAMELED STOVE PARTS in ONE-THIRD the time

One of the finest examples of the economy effected by Mahon cooperation in the modernizing of a FINISHING production line is this installation made at the Florence Stove Company, Kankakee, Ill. This automatic system, for the complete finishing of enamel stove parts and the final finishing of porcelain parts, was installed as the result of a carefully planned survey conducted by Mahon production experts cooperating with the Florence Stove Company engineers. Work travel, proper type and placement of equipment, were determined only after intensive study. When the system went into operation, it was found that work was so greatly speeded up, production time was cut one-third —even in the face of greatly increased production demands.

Substantially Saves on the final finishing of PORCELAIN PARTS

This automatic Complete Finishing System also provides for the final spraying and drying of porcelain parts—with relative savings in production costs. If you would like details of the installation, write us. Mahon engineers may be able to show similar savings to you.

Two Mahon Gas Fired, re-circulating Drying Ovens, each 90' long by 14' high are placed end to end on the roof, with Equipment Room between. Designed to handle 5000 pounds of steel to 450° F. each hour.

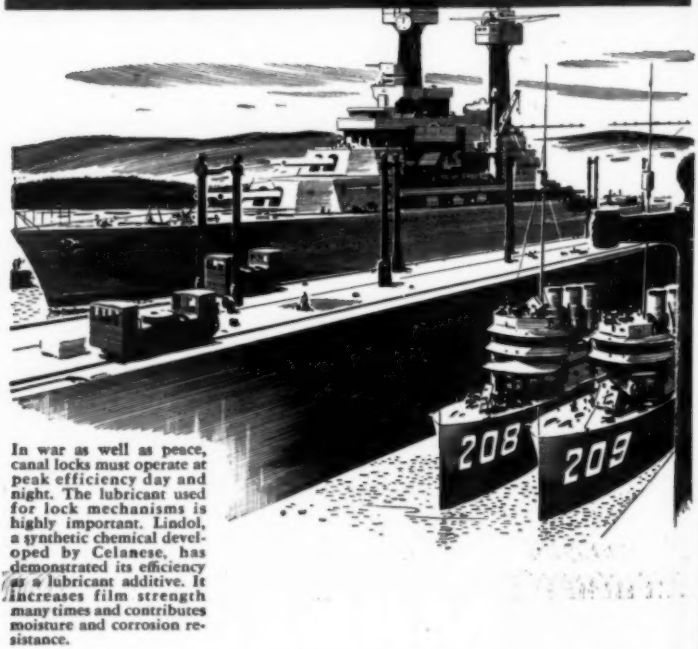
This unique Pin-Point conveyor table carries parts through Spray Booth and then by conveyor through Oven. Note baffle eliminators in Spray Booth, part of the equipment provided for reclaiming porcelain overspray.

THE R. C. MAHON COMPANY

DETROIT 11 CHICAGO 4

Manufacturers of Metal Cleaning Machines • Rust Proofing Machines • Hydro-Filter Spray Booths • Ovens of All Types • Filtered Air Supply Units • Hydro-Foam Dust Collectors—and Many Other Units of Special Production Equipment—including Complete Finishing Systems

Celanese* Chemicals



In war as well as peace, canal locks must operate at peak efficiency day and night. The lubricant used for lock mechanisms is highly important. Lindol, a synthetic chemical developed by Celanese, has demonstrated its efficiency as a lubricant additive. It increases film strength many times and contributes moisture and corrosion resistance.

CELANESE CORPORATION OF AMERICA

Once organic phosphates were "Just a footnote in the text book"

THE RANGE AND SCOPE of Celanese organic phosphates are typical of the results achieved through modern synthetics research. From these hydrocarbons derivatives Celanese has pioneered a group of compounds with many potentialities.

These products of intensive research have been of practical service to engineers seeking materials with specific properties to meet definite needs. Lindol*, Lindol M.P., Lindol E.P., Celluflex* M-142, Cellulube* have shown wide adaptability in meeting various requirements of industry.

As non-flammable *plasticizers* for plastics, vinyl compounds and insulation materials . . . as *water-in-oil* and *oil-in-water* emulsions for waterproof paper and fabric coatings, leathers, water soluble resins, wire drawing and heat transfer liquids . . . as non-flammable *lubricants* and *lubricant additives* for high pressure engines, diecasting machinery, electrical equipment, vacuum pumps and oxygen compressors, these Celanese compounds perform vital functions in a great many operational and manufacturing processes.

The development of organic phosphates demonstrates the ability of synthetics to accurately control chemical and physical properties. It is an example of the results obtained when materials are created for specific needs and purposes.

Celanese Chemical Corporation, *a division of Celanese Corporation of America,* 180 Madison Avenue, New York 16, New York.

*Reg. U. S. Pat. Off.

PLASTICIZERS
ORGANIC PHOSPHATES
LUBRICANT ADDITIVES
INTERMEDIATES
DYE-STUFFS

TEXTILES • PLASTICS • CHEMICALS

able to match colors more evenly than was accomplished before conversion to infra-red gas burners.

Another typical infra-red gas burner installation, in Chicago, has an oven 40-ft. long, 16-ft. wide, 12-ft. high. A 12-ft. wide bar-type conveyor passes through the oven. Various sizes of painted parts are hung on this bar, the parts ranging from large radio cabinets to small pieces for construction of cabinets and other objects. Paints range from black wrinkles to glossy whites. Time and temperatures are identical on all pieces. The type of finish on all must meet strict Army specifications.

Infra-red electric lamps would require a tunnel in which all parts would have to be closely related in size, shape and thickness of material to obtain equal drying, since it is necessary to focus a complete bank of lamps with fairly equal distribution of infra-red rays on all parts of the object. If it became necessary to run various colors through the infra-red electric lamps, it would also be necessary to reformulate each individual color to permit drying at a specified time. It would be impossible to dry each color at the same speed and temperature if the objects varied widely in metal thicknesses. Infra-red lamps are affected by blacks, reds and whites. Suppose the drying cycle is set for products painted black; if those same products are painted red or white, the drying time cycle is affected considerably; in some cases it may be doubled.

Control of Temperature Where Paint Coatings Are Baked

The time and temperature for baking any specific job can be closely controlled by the use of infra-red gas burners. The BTU input of the individual burner can be controlled, thereby controlling temperature over a wide range. On a normal infra-red gas installation, any predetermined temperature can be obtained from approximately 175° to 400° F., by adjusting the temperature controller. This makes it possible to apply more heat to an object without changing conveyor speeds or adding combustion equipment. This point is brought out by the following:

In the case of a particular type of paint that may bake for 10 minutes at 275° F., 7 minutes at 300° F., or 5 minutes at 325° F., it is possible in using infra-red gas equipment to adjust the temperature controller to obtain various temperatures required for the baking process, and the speeding up of the conveyor. However, in the case of infra-red electric lamps it would be necessary to add more lamps or slow down the conveyor to obtain more temperature.

Temperature Measuring Equipment is Important

Here, again, the importance of sensitive temperature measuring equipment comes into full play. We have found that the continuous balance principles of Brown electronic potentiometers have helped us maintain required temperatures for predetermined periods. Continuous positioning of control valves obtained with the potentiometer has reduced processing time and made possible other advantages.

Slowing of the conveyor through an oven affects the predetermined time cycle. It is possible with infra-red electric lamps to vary the distance from the lamp to the object to be dried. However, the

Get this!

With the ROSS Air Heaters, exhaust products of combustion can be used for processes other than drying, such as prime bake or preheating. In many plants these products of combustion can be utilized to effect major economies in their processing.

Figure it any way you like—time, labor, floor space — these "A" Type ROSS OVENS certainly cut production costs. They can do it because they are designed to produce and maintain temperatures up to 500° F.; require only one man to spray and one to unload; utilize shop space to the best advantage. Every ROSS Dryer provides accurate heat regulation and scientific air distribution, for SPEED and SAFETY.

ROSS SYSTEMS

DESIGNERS AND BUILDERS OF AIR PROCESSING SYSTEMS

ROSS CONTROL OF AIR FOR MODERN INDUSTRY SYSTEMS

closer the lamps are to the particular object the greater the possibility of spotting or over-baking and under-baking various parts of the object due to sharper focal points.

Recirculation of hot air when using infra-red gas burners speeds production, reduces fuel consumption and provides a pure oven atmosphere, continuously drawing out all foul air.

Comparison of fuel consumption in gas and electric in cost of BTU, regardless of the type of burners, shows gas costs are generally lower per BTU than electricity. In the case of Burdett equipment, extensive experience has shown that this equipment will operate at a fraction of the operating cost of infra-red lamps on equal installations. Maintenance costs are low, replacements being unnecessary. Infra-red gas burners are capable of withstanding sudden cold water or paint dripping shocks without cracking or breaking.

Summing up some of the important merits of the refractory-type burner: Fuel consumption is low; reformulation of paints for use under this drying system is unnecessary; size and shape of work and thickness of material being processed has no bearing on speed and results; it is unnecessary to focus burners on the actual surface; pure oven atmosphere is always present; wide range of colors, finishes, shapes and sizes can be run through simultaneously with excellent results. Temperatures from 150° to 400° F., can be obtained by resetting temperature controllers, which allows a wide range of temperature types of production without changing the speed of the conveyor.

"Are you positive that this is hand finished?"

"Definitely so! The hand held the spray gun on all four coats."

Prufcoat Laboratories Open New York Office

Norman E. MacCuspie, President of Prufcoat Laboratories, Inc. of Cambridge, Mass., announces the opening of a new branch office at 50 E. 42nd St., New York City and the appointment of David E. Long as General Manager in charge of sales and service-engineering. Mr. Long will make his headquarters in the New York branch office.

The Prufcoat Laboratories specialize in acid-proof, alkali-proof and waterproof protective coatings for industry, and have provided a major part of the corrosion-proofing coatings used in the new plant construction of the synthetic rubber industry.

Manual of Porcelain Enameling

This refresher course in porcelain enameling, reprinted from articles published in The Enamelist Magazine, contains 128 pages, 5½x8-in., 33 illustrations, and is divided into 12 chapters. It is printed on an excellent quality of white paper and is spirally bound between attractive paper covers. The book is priced at only $1.00 by Enamelist Publishing Co., 4150 E. 56th St., Cleveland 5, Ohio.

THE DIFFERENCE IS *CLEAR!*

PERFECTION FLAT FINISH Free From All Distortion . . . Transparent As Clear Glass

● Just as PERFECTION FLAT FINISH shows the beautiful girl in all her loveliness, so does it reveal the full beauty of wood grain and stain when applied to furniture.

PERFECTION is as unlike other flat finishes as day and night. Unique product of synthetic chemistry, it contains no beauty-masking stearates or other flattening agents. That's why PERFECTION is *always perfectly clear, always free from distortion*—why it adds dollars to the value of your products.

For convincing proof, try PERFECTION in your own plant. Fast drying, water-proof, liquor-proof—free from orange peel—PERFECTION FLAT FINISH is available in a full range of beautiful and durable sheens.

PERFECTION
PAINT & COLOR COMPANY
Indianapolis, Indiana

Wooden Toy Finishing

Here is presented some timely information about materials, methods of application, equipment, and other practical data in connection with painting wooden toys on an economical quantity production basis.

BY RUFUS J. FAIRBURN
Zapon Division of Atlas Powder Co.

SHORTAGES of proper materials and competent help have given birth to many problems in the wooden toy industry. Many concerns who, before the war, made other items are now making wooden toys. Many other new companies have been formed for this purpose.

The finishing of wood is, at best, a complex problem. To inexperienced operators and with poor quality lumber, it is doubly so. It is to answer some of the many inquiries received by INDUSTRIAL FINISHING that this article is written.

What You Plan to Finish

I do not know whether you want to finish a piece of wood cut in a shape to represent a gun; whether it is a simple game; a more complicated pull-toy or something on which Junior will ride. The kind of wood used and whether it is as dry as it should be and as smooth as it should be — these are factors to consider, too.

It seems to me that your best approach is to call your paint or lacquer manufacturer. He has an experienced man who will be glad to study your problem and make an intelligent recommendation. He knows what finishing materials are available for your end use. He should have some knowledge of proper equipment for applying the finish. He can suggest economical methods and facilities for handling the work.

Consider What Finishing Materials Are Available

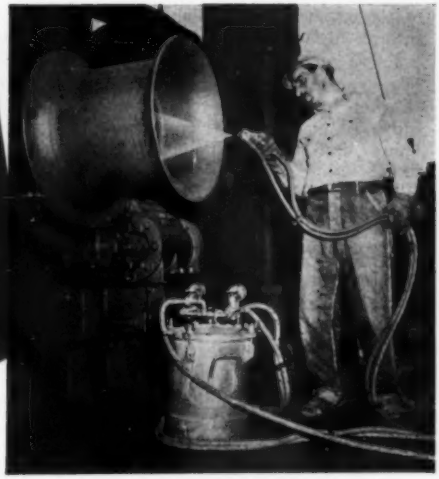
The fluidity of war demands constantly changes the availability of paint and lacquer ingredients. In many cases adequate substitute materials have been found. However, the substitutes do not always have all of the qualities that we desire. On the whole they do a fair job.

At the time of writing this article (early in 1945) there are available for toys, oleoresinous enamels, varnishes, nitrocellulose lacquers (both clear and colored), stains and a few other finishing items.

Oleoresinous enamels and varnishes may have better body and gloss than lacquers. They are very slow in drying and do not dry to as hard a film as lacquer. As a rule they have higher solids than lacquer, therefore better hiding and greater covering capacity (mileage).

It seems then, if cost is the prime factor, that an oleoresinous enamel or varnish offers lowest finish cost. The finishing material must be properly made, of course. A poorly made oleoresinous finish

With Any Finishing Material from Lard to Lead



ECLIPSE

Spray Equipment Is Tops!

IT'S REMARKABLE the variety of jobs assigned to Eclipse low-pressure spray painting equipment. Eclipse equipment is doing regular duty in such contrasting places as bakeries and shipyards. Materials sprayed range from shortening to lead paints. (Up to 33 lbs. per gallon.)

Under any conditions, or with any materials, the same outstanding results are obtained—Eclipse low-pressure equipment requires up to 40 percent less material to cover a given area and covers in 10 to 15 percent less time. Savings are three-fold in time, material and in air costs.

Ask an Eclipse engineer to help you improve your spray painting. Write today, mentioning type of product, and finish, and benefit from the accumulated knowledge of Eclipse Engineering Service. No obligation, of course.

ECLIPSE AIR BRUSH COMPANY
392 Park Avenue Newark 7, N. J.

ECLIPSE

may cost more, per finished piece, than a high quality lacquer.

Force drying equipment may overcome the very slow drying characteristics of the oleoresinous finish. Unless kiln dried wood is being used, force drying of the finish may not be satisfactory. Blisters and other faults may be too prevalent.

Lacquer Dries Quickly, and It Has Other Merits

As a rule nitrocellulose lacquer is used with greater satisfaction than an oleoresinous finish. Its quick drying greatly speeds up the work through the plant. It surface-dries so rapidly that, in a reasonably clean atmosphere, it picks up less dirt. It may be packed with less likelihood of rubbing or paper printing.

The harder film of lacquer will usually outwear the softer oleoresinous finish. In making such a comparison, it must be borne in mind that, unless properly made, either finsh may be brittle or have other faults. On the whole, lacquer may be cheaper in the long run. In the hands of inexperienced help this may be doubly so.

Considerable quantities of excess war materials, such as lusterless olive drab, are available at very low prices. These finishes were extensively used by the toy industry in 1942 and 1943. The greater demand, however, is for gay bright colors. Many toys did not sell well because of their dull unattractive finish.

Flock finishes are available for toys. They are used on wooden animals to simulate fur or hair. They are described more fully in an article in INDUSTRIAL FINISHING for October, 1944.

Methods of Putting on Paint—Tumble, Whirl, Dip, Spray

Toys and parts for toys are usually finished by spraying, dipping, tumbling or centrifugal whirling. Each method has its merits and limitations. Several factors must be considered in selecting a method of production painting.

For short dowels or rounded parts, tumble finishing is often employed. It offers low-cost handling and provides a finish that is usually adequate. It is not usually so satisfactory for soft wood. This subject is covered fully in an article published in September and October, 1941 issues of INDUSTRIAL FINISHING. The coating material must be especially formulated for tumble finishing.

Small parts which, because of their shape, can not be dipped nor tumbled may sometimes be whirl finished. Special equipment is required. Before planning along this line it will be well to consult the equipment manufacturer.

The work is placed in a basket-like compartment of the machine. After it is dip-coated or flow-coated with lacquer or paint, the basket rotates rapidly to throw off the excess coating by centrifugal force. The work is then dumped onto screens for drying. The finishing material must be specially formulated for centrifugal whirling.

Dip Coating; Proper Formulation of Materials

This method is usually cheap and simple. With properly formulated lacquers or paints a satisfactory finish can be produced. However, it is limited to pieces so shaped that they will drain easily.

(Continued on page 85)

A hand grenade with a beautiful finish? Yes, American made hand grenades ARE beautifully finished with lacquer enamels to resist wear and corrosion.

M & W's paints, lacquers and enamels are on hundreds of war materials, from gas masks and bombs to airplanes. Each type of equipment has a different finish requirement and M & W has produced all of them to meet Government specifications.

Although a bomb or a hand grenade can't be called beautiful, a post-war refrigerator or automobile CAN! If you're thinking now about the finish of your post-war product, think M & W finishes. There are hundreds of them, designed to meet any requirement and to give your post-war product eye appeal.

MAAS & WALDSTEIN COMPANY, NEWARK, N. J.

PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALTY FINISHES FOR ALL PURPOSES

BRANCH OFFICES & WAREHOUSES: 1658 CARROLL AVE., CHICAGO, ILL. • 1238 W. PICO BLVD., LOS ANGELES, CALIF.

The deep well of experience which enables Reliance to deliver the right finish for every job, can only be measured by the satisfactory performance of the finishes we have developed for many of the country's leading manufacturers.

If you have a present or postwar finishing problem, we are ready to work it out for you NOW. There's no obligation involved. Write us.

Rely on Reliance

RELIANCE VARNISH CO., INC.

The lacquer or paint should be heavily pigmented for dipping. It should flow out and drain off before setting. It must be stable in the dip tank. An improper formula might curdle or gel upon standing in a tank. Where several pigments are used to produce a certain color, a separation of the colors might occur.

It will be readily seen that a finish designed for spraying or other application might give trouble in a dip tank. Consult your paint supplier before filling a large tank.

Be Sure That You Use the Right Thinner

If you are using lacquer be sure that you have a thinner that is formulated for dipping. A thinner formulated for spraying is usually too volatile to allow for proper flowing. This may result in curtains (sags) and excessive clinging drips or tits. A very volatile thinner will evaporate so rapidly that an unnecessary amount of thinner is required. The dip thinner may cost more in the drum but it will probably be cheaper in the long run.

If a synthetic resin finish is used, consult the manufacturer regarding a proper thinner. In some cases a coal-tar hydrocarbon, such as xylol is satisfactory. Some formulas require a special blend of solvents that should be supplied by the enamel manufacturer.

Oleoresinous paints and varnishes are usually soluble in one of the naphthas. Turpentine is slower; and turpentine straight or a mixture of it and V. M. & P. naphtha is usually satisfactory for dip work. If a slower solvent is needed, pine oil may be added to the solvent mixture.

Determine and Maintain Correct Viscosity for Work

Regardless of the finishing material and thinner used, some evaporation will occur. If this were not so, the finish would not dry. It is therefore necessary to add thinner from time to time to maintain proper viscosity.

Where the specific gravity of liquids and solids are known, a hydrometer will show the relation of solids to liquids. This is not usually the best method of determining viscosity. A Ford cup or some similar viscosimeter is preferable. It is only with some such tool that viscosity may be maintained accurately in the tank.

Stirring or Agitating Material in Tank

It is common practice to apply sealers and pigmented undercoats to toys by dipping. In some cases the final top coat of enamel is then sprayed on. If undercoats are to seal the wood and sand easily, they must contain inert pigments. These inerts are heavy and they settle to the bottom of the dip tank. For this reason frequent stirring is necessary.

A pigmented lacquer may be so made that there is very little pigment settling in the drum. After it has been thinned for dip coating, the liquid vehicle is usually too low in viscosity to hold the pigment in suspension. For this reason the contents of any dip tank must be stirred often enough to insure uniformity in the finish.

If you periodically clean an accumulation of sludge from the bottom of your tank, look to your stirring. This pigment should have been in the liquid that went onto your work. It has no value in the bottom of the tank. In some cases,

inadequate stirring can cause a change in color or luster of the finish.

Design of Dipping Tank and Drainboard

The dip tank should be only slightly larger than the largest rack. There is no profit in exposing an unnecessarily large area of paint or lacquer to evaporation. The tank should be deep enough to permit a reasonable period of operation without refilling.

Some finishes, particularly certain lacquers, react to zinc. For this reason a galvanized tank or drainboard may not be satisfactory. A tight wooden tank or a tin-lined tank is satisfactory for most dip finishes. A wooden drainboard may be covered with ordinary wrapping paper; then the soiled paper may be disposed of to remove the fire hazard.

When a dip tank is not in use it should be tightly covered. There are three reasons for this: An uncovered tank permits needless evaporation of solvent; it permits dirt to drop into the paint; it offers a fire hazard, since these volatile materials are inflammable.

(To be continued)

How to Avoid Gas Oven Explosions

IN the last few months there have been several serious gas-oven explosions in the finishing rooms of manufacturing plants in the Middle West. This very plausibly could have been caused by carelessness, not only of the oven operator, but also by those persons or organizations who are responsible for instructing the operator.

It is of paramount importance that the oven operator be instructed in the correct manner of operating his oven and that he be fully acquainted with all of the precautions that must be taken to assure continued safe operation of the equipment. Most modern ovens are equipped with many types of rate-of-temperature controls and safety controls which are interlocked with circulating fans, and it is necessary to know how to operate them properly.

Many persons responsible for oven operation believe that if they follow certain basic rules which are determined by the equipment manufacturer, there is nothing more to be done. The main things to do when operating an oven or when instructing an operator on the operations of an oven, are the following:

(These remarks more or less pertain to the older styles of oven which are not equipped with the latest design electric protective devices and the sensitive and very accurate temperature controls. They more nearly apply to the average oven that has been in operation in the plant for some period of time.)

1) Be sure that the circulating fans are in complete operation and that the fresh air intakes are not clogged with dirt. There should be a continuous infiltration of fresh air into the system. Most explosions are caused by unpurged gases or excessive thinner concentration within the oven enclosure.

When starting up the oven at the beginning of the day it is usually wise to purge the oven; in other words, let fresh air circulate through the system for about five minutes to remove all vapor concentrations or gas pockets which may have accumulated during the shutdown period. *(Cont'd page 88)*

IS THE WORD FOR

ARCO

PRODUCTION FINISHES

The fisherman sails confidently into dirty weather, secure in the dependability of the compass in the binnacle behind the wheel. There's a similar confidence among users of Arco Production Finishes. They know that each shipment matches specifications exactly, fulfilling—or even surpassing—the required performance characteristics. Specify Arco and you specify dependability.

Paints for Industry THE ARCO CO.

CLEVELAND, OHIO · LOS ANGELES, CALIF.

2) Regularly check all of the burner equipment, whether it is an open-flame burner, line burner, or whether the oven is heated with an indirect heating unit or oven infrared burners. Check them periodically for operational features and inspect them regularly to see that none of the burner orifices are plugged. After lighting the oven, check to see that the burners are all operating satisfactorily before starting the production run.

3) It might be wise to check all the air-distribution ducts in the main oven exhausts to see that accumulations of dust or solvent concentrations have not hampered their air-handling capacities or rendered them hazardous from the point of actual ignition of the condensed solvent.

4) Possibly a more important and long-range habit is to have the equipment manufacturer thoroughly instruct and acquaint the operator with the proper procedure for lighting and shutting down the equipment. It might be advisable to take some time out periodically to see that the actual operator is carrying on this function correctly, because this may avoid serious accidents either to the employees in the department or to the equipment itself.

Naturally now, at the peak of our production effort, all employees are needed and all the effort they can bring to bear on production is needed. At this particular time also, equipment is one of the hardest items to replace. As the old saying goes, "An ounce of precaution is worth a pound of cure," so let's take a few extra moments to see that we produce to our maximum effort here at home, to the overall benefit of our figthing forces. Keeping the oven operating correctly and safely contributes very much to this end.—X.

Pretty girl at work applying tape inside the plexiglass nose of a Douglas A-26 Invader (bomber) at the Douglas plant in Tulsa, Oklahoma.

DeVilbiss Wins 4th Army-Navy Production Award

For the fourth time employees of The DeVilbiss Co., Toledo, Ohio, have won the Army-Navy E Award for high achievement in the production of war material, according to advice recently received from Robert P. Patterson, Under Secretary of War.

DeVilbiss workers received their first citation in December, 1942, and for maintaining their record since that time they have earned three supplemental awards which adds the third star to their Army-Navy E flag.

Monroe Sander Corp. Gets Army-Navy Award

The Monroe Sander Corp., 10-18 46th Ave., Long Island City, N. Y., manufacturer of paints, varnishes, and lacquers, has been notified by the Under Secretary of War that the Army-Navy Production Award has been conferred upon its organization for outstanding performance in the production of war materials.

We invite inquiries regarding your finish needs, present and future.

Quality...versatility...economy...always have been outstanding characteristics of Egyptian finishes.

Through war years Egyptian's high standards steadily have been maintained, with production largely on finishes for war goods, of course.

For your present war production, Egyptian finishes are available . . . and for your post-war needs, they will be . . . when post-war actually comes. War or peace "quality" and "Egyptian" are synonyms.

THE EGYPTIAN LACQUER MANUFACTURING COMPANY
ROCKEFELLER CENTER, NEW YORK 20, N. Y.

EGYPTIAN
SPECIALIZED PRODUCTION FINISHES

Questions and Answers

Planning Schedules for Postwar Radio Cabinets

EDITOR'S NOTE: The following is another reply to the question published, under the above title, in March issue. The question was from a Pacific Coast concern that is planning to install a production line finishing department in connection with its cabinet plant. Production will be confined, in this particular plant, to the manufacture of table-model radio cabinets. This will be a postwar project. Some preliminary plans have been furnished, but the company questions certain phases of the proposed schedule and overall layout.

YOU are wise in questioning every phase of proposed conveyorized layouts for your finishing department. Many of the prewar conveyors in wood finishing plants were ill-conceived, poorly designed, constructed without proper engineering aid, and improperly operated. The result can best be described as a "mess."

Your Ideal Conveyor

A conveyor is essentially a mechanical means for transporting objects or materials continuously from one point to another. The ideal conveyor in the finishing department will carry the objects continuously from the cabinet room, through the application and drying areas, to the point where they are packed for storage or shipment.

It is desirable that all operations be performed while the objects are in motion. The conveyor should be so arranged that it is unnecessary to remove objects from the line at any time. Further, it is desirable that the conveyor transport the articles right through the ovens without pause or the need for special attention.

Some of the earlier conveyors were makeshift affairs. One of the gravest faults of some early installations was improper spacing of the various work stations, or of the different finishing operations. Many times they were designed with inadequate knowledge of the application and behavior of the finishing materials. Insufficient flowout time before entering ovens, insufficient cooling time after leaving ovens, and spray booths too small for high-speed production were often the causes of finishing headaches.

Plan for Future Changes

Another mistake made in the design of some early conveyors was that too little thought and planning were devoted to possible future changes in design of the articles, or to possible changes in finishing materials. As a result, a highly rigid schedule was established which made future variation difficult. A little planning in advance would have eliminated many headaches later. In this connection it might be mentioned that the overhead monorail conveyor proved to be the most versatile type.

MONARCH

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Monarch's constant research and experiment have made this Lacquer Rubbing Compound the finest product of its kind available. To obtain that soft sheen of quality, the "top" industrial finishers use Monarch's 11X51.

- Monarch's complete line of industrial lacquers is constantly being improved and tested, so that its quality will remain supreme. Write for color card or any information you need.

MONARCH LACQUER CORPORATION

19 GAY ST., MANHATTAN 14, NEW YORK

But by far the most serious fault of almost all early conveyors was poor drying conditions. Poor oven design was usually the basic factor in the difficulty. In order for conveyorization to be practical, drying times must be reduced to the absolute minimum. One approach is to use the fastest drying materials available. The other is to employ force drying or low temperature baking (on wood products) to speed up the drying process. The drying ovens or "hotboxes" employed for this purpose must be properly designed, installed, and operated in order to make conveyorization practical.

Many early conveyors were set up to give, say, 60 minutes of drying for the wood filler at a temperature of about 125° F. But when the conveyor was actually in operation, and the filler failed to dry properly, a host of troubles developed. In some cases troubleshooters discovered that improper design and operation of the oven was the difficulty. In one case the maximum temperature was reached for a period of only five minutes in the oven, rapidly dropping away to room temperature at either end of the cycle. Poor heat seals and improper distribution of the heated and humidified air were the causes of the trouble.

Uniform Oven Temperature and Air Circulation Necessary

First of all, the temperature in all parts of the oven should not vary more than 5° F., except within a few feet of the exits and entrances. Further, air circulation must be adequate. Air circulation is of more importance in drying than temperature, popular opinion to the contrary notwithstanding.

Air circulation is needed to remove solvents and other vapors evolved by the drying materials, and to bring oxygen to the surface for absorption. But of equal importance, air circulation is needed to bring heat to the surafce where it is needed. It does little good to have a high temperature in the oven if air circulation is so poor that each object is surrounded by a relatively thick insulating blanket of still air. High rate of circulation is of vital importance.

This now enables us to answer the inquiry. A combined filler and stain operation, followed by six minutes of force drying is entirely practical *provided* the temperature is above 120° F., and a very high rate of air movement is provided. Synthetic fillers are available which will dry with perfect satisfaction under these conditions.

As to engineering help on the installation of a conveyor, the job requires 3-way collaboration. The manufacturers of conveyors and application and drying equipment, the manufacturers of finishing materials, and the customer should work together in close harmony if the job is to be done correctly.

Large concerns contemplating the installation of conveyors can satisfy themselves as to the practicability of proposals by actually constructing small force-drying rooms for preliminary testing. A large electric oven with a high rate of air circulation is also satisfactory for this purpose. Materials can be tested on sample panels. This is essential in order to make sure of providing adequate drying facilities along the conveyor line. Examination of existing installations is one of the most fertile fields of investigation for the manufacturer contemplating the installation of a conveyor in his finishing department.—ROLLIN H. WAMPLER.

"All right! First you wise guys had to have WEAR MASTER Finishes even if they DID sell more furniture than we can make! Then you wanted S-I-P CLEEN-UP Polish, too. Now tell me what we're going to do when that sales line hits the roof!"

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Yes . . . and you'll boost sales still more when you adopt S-I-P CLEEN-UP Polish, the perfect final cleaner for *all* fine finishes. It whisks away dust, lint, finger marks and rubbing compound—leaves no film—works faster, goes farther.

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Just clip this coupon to your letter head and mail it to us for a generous FREE SAMPLE of S-I-P CLEEN-UP Polish.

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EVANSVILLE 4, INDIANA

Materials Supplies Equipment

Industrial Humidifier

Skilbeck humidifiers are now available in multiples of from 2 to 16, with a capacity range of approximately 240 to 1820 gallons per 24-hour period, taking care of areas from 80,000 to 640,000-cu. ft. of enclosure. They will operate on pressures ranging from 1-lb. to 20-lbs. They are simple to install and are adaptable to use in air-conditioning systems. These humidifiers are distributed by Techtmann Industries, Inc., 828 N. Broadway, Milwaukee 2, Wisc.

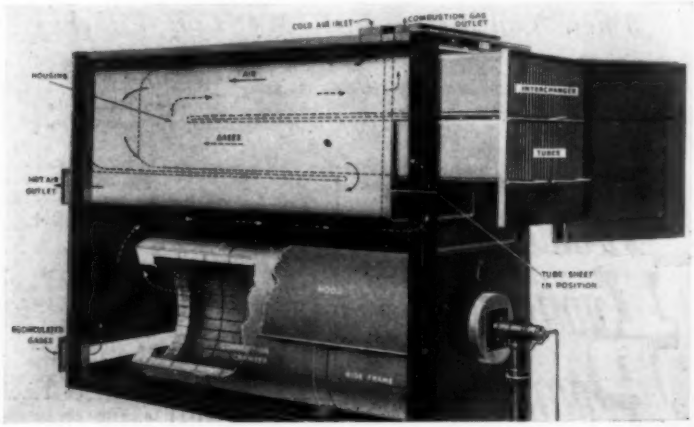
Recirculating Indirect Air Heater

An indirect heater is one in which the air being heated is kept completely separated from the products of combustion, so that only clean air is delivered to the oven or dryer. For years it has been the aim of heater designers to build an indirect-type air heater, which would operate commercially at a higher efficiency than was possible with available units. Here it is! J. O. Ross Engineering Corp., 350 Madison Ave., New York 17, N. Y., now offers this latest addition to its line of air heaters.

Fuel efficiency of 85% and over is obtained. These high efficiencies are made possible by recirculating a large part of the combustion gases and exhausting only a small volume to the fresh air volume needed to burn the fuel.

The arrangement of the parts that make up the heater is clearly shown in the illustration. The steel interchanger is located over the combustion chamber. The air to be heated passes along the outside of the tubes and the combustion gases pass through the tubes.

The gases and air travel in counter-



Combination view of indirect air heater, showing its principle of operation.

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AVAILABLE NOW

Many friends of Hilo Crystal responded immediately to the news that this finish was available again. We anticipate no curtailment of the supply, yet war brings quick and unexpected changes. Your order received now—for prompt delivery—will assure you a supply of this sparkling finish.

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flow direction with maximum effective temperature differential. The fuel is completely burned in the combustion chamber with a minimum of makeup air, with resultant temperatures of 2000° to 2800°F. The hot gases leaving the combustion chamber are then diluted with the cooler recirculated gases brought back from the heater exhaust gas outlet, by means of a fan. This mixture then enters the tubes at not more than 1000°F. Oil or gas may be used as fuel. Maximum air delivery temperature is 600°F.

2-Stage Surge Washer

A new development in the line of Phillips metal cleaning machinery is designed to provide economical washing for smaller parts in baskets, using an emulsion cleaner (or alkali cleaner) and water rinse. In construction the unit comprises two compartments with a dividing, insulated wall between. One contains the cleaner, the second the water rinse. The mechanism is reciprocating in action, moving the rack on which the basket rests up and down through the cleaner and rinse, and accommodates two baskets at one time—one being swished through the cleaner while the second is being swished through the rinse.

This reciprocating cycle moves the baskets vertically through the solutions, from total immersion to total emersion, producing the maximum of agitation for the removal of chips, soil, etc., not readily removed by simple cleaning. Either surge platform will accommodate basket loads of 50-lbs., operated singly or together. The machine is 40-in. long by 21-in. wide. Each tank holds 16½ gallons of solvent or water and each surge platform takes baskets 14-in. square by 6-in. high. The reciprocating action is powered by a 1-3 h.p. motor.

Cut-away view of 2-stage washer

The machine is available in four models: 1) unheated, 2) with heated solvent tank, 3) with heated rinse tank, and 4) with both tanks heated. Heated tanks are provided with automatic thermostatic controls which keep the temperature of the solution to within plus or minus 5° F. The water rinse tank provides for overflow and can be fitted with a flow control valve.

The manufacturer recommends the use of this tank with Swirt, their new emulsifying metal cleaner, but it may be used with any cleaning compound that does not adversely affect galvanized steel. The surge washer is also provided with a hinged cover which locks into position as draining board to drain the solvent back into the tank before baskets are placed into the rinsing compartment. A product of Phillips Mfg. Co., 3482 Touhy Ave., Chicago 45, Ill.

Fire-Retardant Coating

Albi-Firepel "S" is a fire-retardant coating material—supplied in concentrated form for dilution with water. (It can also be furnished on special order in ready-to-use form or in color.) After application it dries to a hard white flat surface, with high light reflective qualities. It effectively insulates the surface of the material against the attack of fire.

It is applied easily, either with brush or spray. Its main use is the protection of interior building surfaces. It can be applied to either old or new construction. On new buildings both faces of interior wall surfaces can be coated, for added protection.

Since it's highly adhesive, it will bond well to wood, wallboard, sheathing board, wood fiber materials or metal. Among specific uses are the protection of walls, ceilings and doors;

Remember Pearl Essence for

A Decorative Finish

MEARLMAID Pearl Essence is being used on hundreds of different products to produce a decorative and attractive effect.

Investigate the numerous advantages of a Mearlmaid Finish before you select the final coating. Its sales appeal and merchandising value are important.

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Has High Reflective Light Value

For Dials Controls Instruments

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switchboards and other electrical control panels; barrels and bins; wooden lockers, cabinets, storage rooms; combustible surfaces in homes and garages, showrooms and offices.

Albi-Firepel "S" is economical. One concentrated gallon on the average will give one-coat coverage on 200 to 300-sq.ft., depending on the character of the surface. Two coats are specified for effective protection. Labor cost is low too; it handles easily, spreads rapidly, dries quickly. It has the approval of the Underwriter's Laboratories—foremost authorities on fire-prevention. This material is a product of Albi Firepel Corp., 9 Park Pl., New York 7, N.Y.

New Cleansing Cream

A new cleansing cream called Den-Nex, used for removing lacquer, paints and other resistant materials from the hands, is announced by the Dennis Chemical Co., 2701 Papin, St. Louis 3, Mo. This new product removes such other tenacious substances as enamels, airplane dopes, varnish, resin solutions, synthetic adhesives and inks and dyes. Den-Nex is used after, not before work, and entirely eliminates the need for hazardous solvents.

Simple to apply, Den-Nex is merely worked into the skin like soap until absorbent substances are loosened, then rinsed off with water. Free of abrasive, scouring or clogging substances, it leaves the pores open, the skin thoroughly cleansed, soft and smooth because of its lanolin base.

Acid-Resistant Work Clothing

A complete line of Ply-Garb clothing for men and women, affording protection against oils, acids, caustics, water, dust and fumes, is announced by The Milburn Co., 3246 E. Woodbridge Ave., Detroit, Mich., pioneers of skin protection in industry. Ply-Garb affords maximum protection against every common hazard with a minimum of weight. It is fabricated from cotton or duck, specially processed with plastic.

Shot Blasting Method for Stainless Steel Products

A new shot blast for cleaning stainless steel castings, forgings and other products is announced by The Cooper Alloy Foundry Co., Hillside, N. J. It consists essentially of the use of stainless shot instead of the usual steel shot which deposits a corrodible film of iron on the casting or other product being blasted. This action affects one of the most valuable properties of stainless steel — it's resistance to corrosion and oxidation. The use of stainless shot avoids this deposit of corrodible metal and allows the product to be cleaned down to bright, rust free metal.

Cleaning by this method is accomplished in the conventional manner, using standard shot-blasting equipment.

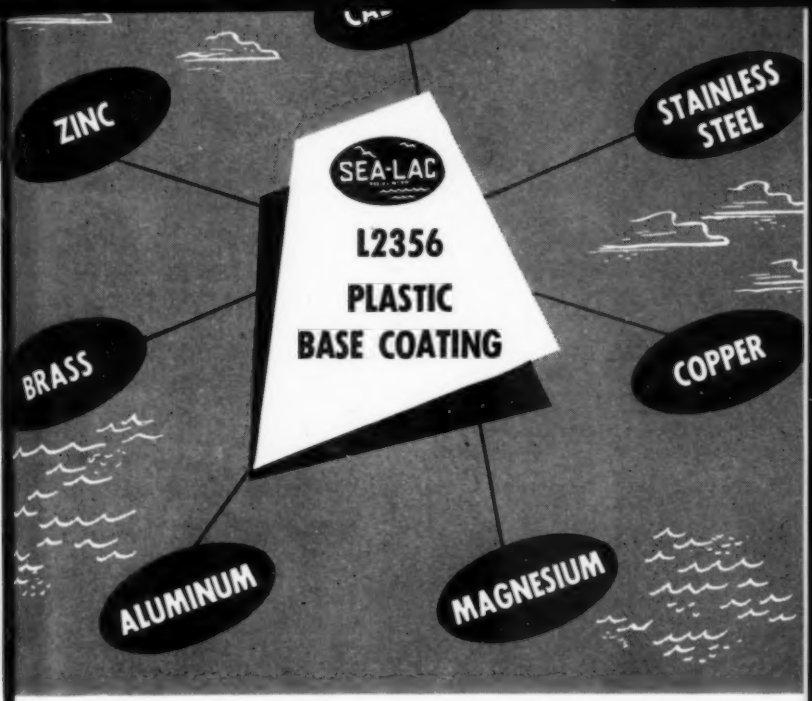
Although patented by Cooper in 1937, the process has been the subject of experiment and improvement since that time and is only now being offered to foundries and other concerns on a license basis.

Spray Booth Compound

A new line of compounds for keeping spray booths free from accumulated paint residues is being marketed by the Fidelity Chemical Products Corp., 430 Riverside Ave., Newark 4, N. J.

For use in water-wash spray booths, Fidelity compound No. 178, added in small quantities to the circulated water, reduces the surface tension of the paint particles and insures their thorough wetting, according to the manufacturer. This action, it is said, aids in throwing the particles from the air stream, prevents them from adhering to the metal surfaces of the system, and from clogging pump and piping, and facilitates their collection and removal. It is also claimed that the compound is mildly alkaline and does not have the corrosive effects of harsh caustics.

Dry spray booths and surrounding areas may be easily kept clean by coating surfaces likely to be spattered



A MUST FOR METALS

versatile and resistant!

Here's a coating you can apply — and make "stick" — to any metal. Its adhesive qualities recognize no limitations. Zinc, brass, magnesium, cadmium, aluminum, stainless steel, copper — none offers a challenge that SEA-LAC L2356 cannot overcome.

This plastic base coating won't peel or flake; and whether air-dried or baked, it resists harsh action of salt spray, humidity or organic solvents.

Made in black and other colors, its wide range of adhesion makes it ideal as a primer for products made from more than one type of metal.

DURALAC CHEMICAL CORPORATION

Lister Avenue Newark 5, N. J.

by the spray with Fidelity compound No. 229, which is greaseless and fireproof. It may be applied with spray gun, brush, or trowel. The coating is said to keep moist for weeks and, when desired, may be readily removed with the adhering paint by means of a trowel or scraper.

Parts Washing Machine

A new automatic washer for industry is announced by the Modern Mechanic Co., 122 S. Michigan Ave., Chicago 3, Ill. The heavy-duty model includes rinse vats for production-line work. One man can operate three baskets of metal parts—washing, rinsing and draining each basket at the same time.

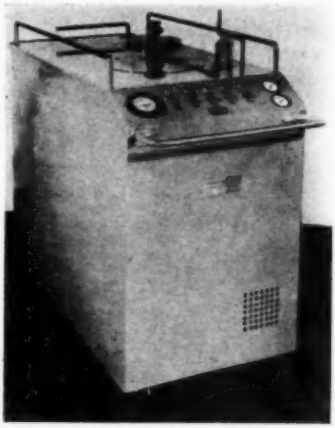
The impeller pump is powered with a ½-h.p. single-phase motor. It forces a ton of solvent every minute over parts to be washed, quickly and efficiently removing acid, grime, grease, etc. Only 65 gallons of washing liquid are used and it is automatically screened by baffle-and-grill so it can be used over and over. Settling action for dirt and chips is provided for in the design of this machine.

Service required is reduced to a minimum because there are only three moving parts: a motor, impeller and V-belt.

One model is 63-in. long, 21-in. wide, and its top edge is 36-in. from the floor. The company also manufactures an all-purpose model for off-and-on use in small space. Conveyor-type models for special jobs can be furnished too.

Corrosion-Preventive Service Carts

New equipment for completely handling the job of corrosion-proofing aircraft engines has been designed and is furnished to ten of the aircraft engine builders by the Youngstown Miller Co., Sandusky, Ohio. This equipment, known as Corrosion Preventive Service Carts, is used to circulate a hot mixture of lube oil and rust preventive through aircraft engines. The engines are treated in the test cells following the final test runs. This operation is sometimes referred to as "pickling."



Circulates a hot mixture of lube oil and rust-preventive compound.

Each job has been engineered to suit the various specific requirements of each type and size of engine. All carts are complete with motors, electric heaters, thermostats, controllers, pumps and filters (when required). The oil is vigorously agitated to prevent localized overheating and to insure a perfect mixture.

Protective Coating for Magnesium

A new protective coating for magnesium has been developed which opens the way for industrial use of this light metal to an extent that just a short time ago seemed years away. For interior use a one-coat job provides a decorative and preservative finish; for exterior, two or four coats offer protection that will last for many years. For polished metals, such as furniture, a clear protective finish can be supplied. This new coating for magnesium is a product of Paint Research Associates, 34 S. River St., Aurora, Ill.

BAKING ENAMELS
LACQUERS
ENAMELS
SEALERS
PRIMERS

NEW PERIOD
WOOD and METAL
FINISHES

SYNTHETICS
VARNISHES
SHELLAC
FILLERS
STAINS
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PRODUCT DEVELOPMENT

RESEARCH AND PRODUCT DEVELOPMENT in all fields continues at an accelerated pace during the stress and strain and exigencies of war. In the field of chemistry progress during the war has been amazing. All types of synthetic resins, gums, nitrocellulose and other raw materials from which organic finishes are formulated and processed offer great possibilities because of research carried on during the war years.

The N.Y.W.S. Laboratories have been working with these new and improved materials to keep the NEW PERIOD production finishes in line with the latest developments. These new developments mean better finishes, faster drying and less man hours per unit of production.

Manufacturers who are looking forward to better finishes, speeding up production schedules and reducing costs, should be interested in NEW PERIOD Products. Submit your problems to our laboratory and we will gladly send working samples for a production test.

NEW PERIOD PRODUCTION FINISHES

NEW YORK WOODFINISHERS SUPPLY CO. INC.
109 IMLAY STREET BROOKLYN, N. Y.
Established 1917

Organic Solvent Vapors and Worker Protection

ALL volatile organic solvents, including gasoline, benzene (benzol), naphtha, carbon tetrachloride, and trichlorethylene, give off toxic vapors. Workers using any of these solvents in cleaning, degreasing, cementing and other operations must be protected from the effects of inhaling excessive amounts of their fumes.

Basic protection is provided by keeping the concentration of solvent vapors in the general atmosphere of the workroom below "the maximum allowable concentration (M.A.C.) for continuous exposure".

This limit, which represents the maximum concentration of solvent vapor to which workers may be continuously exposed during an 8-hour work day, has been established by the American Standards Association for several of the commonly used solvents, but many states have standards of their own. The limits vary from 50 parts of solvent vapor per million parts of air for benzene to 1000 parts per million for petroleum products unmixed with more toxic substances. Solvent users can obtain M.A.C. tables from the Industrial Hygiene departments of their respective states, or, in states without such departments, from the U.S. Public Health Service, Washington, D. C.

Natural ventilation may suffice to provide this basic protection where the contamination of the atmosphere is slight, as where the solvent is being used in small quantities or is applied in equipment that prevents the escape of vapor. In other cases, it may be necessary to employ some form of mechanical ventilation, such as a local system which will draw off the vapors as they arise or strong general ventilation which will rapidly dilute the vapors to a safe level, as advised by a ventilating engineer.

Working conditions in a plant are probably satisfactory if the air is free from the pronounced odor of the solvent being used; but, since odor is not an adequate criterion, an atmospheric survey should be made. This requires the services of a competent chemist. In some states, such work is done by the State Industrial Hygiene Department on request.

However, even where the workers as a group are effectively protected by these measures, certain individuals may be endangered by practices like the following:

Using solvents in poorly ventilated areas, such as small rooms, basements, pits, etc.

Applying solvents in close proximity to the face, as in cleaning floors or machinery.

Working over open containers of solvents.

Handling products damp with solvents.

Opening containers or equipment holding solvents in such a manner that high concentrations of the vapor are inhaled.

Permitting drafts to blow solvent vapors in the direction of workers.

Allowing persons to work with solvents to which they are abnormally sensitive.

Entering tanks containing solvent vapors without proper respiratory protection.

It is not enough to prohibit such practices. Workers must also be educated to the dangers involved, and constant supervision must be maintained to prevent any one from taking chances.

When workers are unavoidably subjected to excessive concentrations of solvent vapors, they should

PUT YOUR BEST FOOT FORWARD

You know that it is good business to display your merchandise as flatteringly as possible . . . that's why you take pains to make your design attractive as well as functional. Finish plays a major role, too, in the sales-appeal of your product. Let our Creative Studio create a special finish for your product that will make it an eye-catching stand-out in its field. Our artists excell in designing finishes that are unique and distinctive and they are always at your service.

In Tampering with Quality

ROCKFORD VARNISH *Company*
ROCKFORD ILLINOIS

Manufacturers of Protective and Decorative Coatings

be protected with suitable gas masks. Where the vapor concentrations are relatively low, canister-type masks approved for organic vapors by the U. S. Bureau of Mines may afford adequate protection; but, for high concentrations, as in vapor-filled tanks, approved air-line respirators must be employed.—SAFETY RESEARCH.

V. J. Dolan Enlarges Factory

In a letter, V. J. Dolan & Co. states that, "We are just contracting for the construction of an addition to our Research Laboratory, which will double its capacity. We are installing additional equipment, including a laboratory roller mill, a new pebble mill laboratory unit and infra-red equipment. We propose, when the laboratory is completed, to have one of the best equipped and most modern research laboratories available today."

Letters from I. F. Readers

(Continued from page 10)

stand continued high temperatures. If you have information on white finishes which will stand continued exposure to the temperature mentioned in your magazine, we would appreciate getting the name of the manufacturer.

Incidentally, we desire to take this opportunity of complimenting you on the many helpful and instructive articles on finishing problems which we have found in the issues of INDUSTRIAL FINISHING since the writer has been on your mailing list.

We wonder, however, whether there are others among your readers who find your "Letters from Readers" items of interest to them which carry an answer of: "Information furnished," and which leaves the rest of us literally "hanging in the air"?—(Stove Mfr.)

In a letter we are submitting names and addresses of several firms, some of whom, we believe, can supply the heat-resistant finishes you want.

Thank you for telling us that you like INDUSTRIAL FINISHING — except that you would prefer finding complete information included in replies to the inquiries we publish. Our object in publishing a few of the many inquiries we receive is to reveal certain trends of thinking in the industry, certain lines of demand, etc., and to uncover new sources of available products and services. Complete answers, if published here, would occupy considerable space, thereby crowding out some of the inquiries, and it would involve repeatedly publishing the names and addresses of certain business firms in the editorial columns. Eventually, this might be construed to be a kind of subtle or veiled (and objectionable) form of advertising for those firms.

Black Oxide Finish

Our attention has been directed to the article on pages 22 and 23 of Aug. 1943 number, by Mr. A. F. Brookes, referring to a black oxide finish for use on steel gauges. We are interested in this process, but cannot obtain any information as to the chemicals used, or the methods of applying the finish.

We would be very grateful if you could let us have sufficient information to try out the process, or alternatively put us in touch with Mr. Brookes.—Indi-Gage, Ltd. (ENGLAND).

Several companies in this country supply materials and directions for producing this finish. Some of them advertise every month in this magazine. We are sending you their names and addresses.—ED.

Infra-Red Drying

We are seeking information about infra-red drying methods and equipment for small wooden items. Can you please help us with his problem?—N. Y. P. Co.

The article on page 31 of February 1945 issue of this publication entitled, "How We Improved Our Infra-Red Baking," signed by Jerome C. Stiegler, has come to our attention. We will appreciate getting the name of the industrial firm with which Mr. Stiegler is connected, and their address, if it is possible for you to provide it.—THE FOSTORIA PRESSED STEEL CORP.

Information supplied.—ED.

Colored Crack Filler

Several years ago I was using a crack filler that was made in various colors. It came in a powder form and had a special liquid to mix it. I would appreciate it if you could give me information on where I could obtain it, as I need it in our refinishing department.—V. Bros. (Artcraft).

AMERICA'S FINEST

Padding Lacquer

TOUCHING-UP

RENOVATING

Qualasole can stand the "test" of either the factory mass production or the small home renovating job. Craftsmen and foremen alike, agree that Qualasole renews the rich qualities of wood, is easy to apply, is economical, quick drying, and durable—that Qualasole is superior when french polishing, padding, touching-up and renovating—on antiques, reproductions, modern or mass production. Being able to stand these "tests" has made Qualasole America's Finest Padding Lacquer.

QUALASOLE

21 GAY STREET NEW YORK 14, N. Y.

QUALATONE PRODUCTS, INCORPORATED

Booklets Catalogs Circulars

New Catalogs on Airblast Equipment

A new illustrated catalog has been published by American Foundry Equipment Co., 555 S. Byrkit St., Mishawaka, Ind., describing its complete line of airblast equipment, which includes rooms, cabinets, tanks, suction guns, nozzles, and accessories. A copy of this catalog can be obtained by writing direct to the manufacturer or its district sales representatives.

Protective Coating Booklet

Protective coatings for heavy outdoor and underground equipment are listed and described in a colorful illustrated booklet of 20 pages, 8½x11-in., published for free distribution by Reilly Tar & Chemical Corp., Merchants Bank Bldg., Indianapolis 4, Ind.

This booklet describes and shows typical applications of Reilly protective coatings for metal, brick, cement and wood surfaces. It also describes Creocote paint for creosoted wood block floors, poles, guard rails and posts, and lists many of the company's other products.

Handbook on Porcelain Enameling

A technical handbook titled "Design and Fabrication of Metal Parts for Porcelain Enameling" is now available from the Porcelain Enamel Institute.

Prepared as a guide for production men not familiar with the requirements of the porcelain enameling process, the handbook is also a summarization of essential basic principles for those within the industry. It contains 18 pages 8½x11-in.

Following a foreword which explains the basic properties of porcelain enamel, the booklet is divided into four sections: I, Selection of Materials; II, Design Factors; III, Fabrication, and IV, Definition of Porcelain Enameling Terms.

Free copies of this handbook "Design and Fabrication of Metal Parts for Porcelain Enameling" may be secured through this publication, or by writing direct to Porcelain Enamel Institute, 1010 Vermont Ave., N.W., Washington 5, D.C.

High-Melting Point Synthetic Wax

The Glyco Products Co., Inc., 26 Court St., Brooklyn 2, N. Y., announces the publication of a 16-page bulletin entitled, "A High Melting Point Synthetic Wax." This gives detailed information on the high-melting point synthetic wax produced by the Company under the name of Acrawax C.

This wax has demonstrated some outstanding qualities when used in several varied industrial applications. Its exceptionally high-melting point (280° F.), inertness, and water repellent characteristics, are but a few of the features which have lent themselves to many new industrial developments in the field of adhesives, electrical insulation, varnishes and lacquers, plastics, textiles, and in the field of elastomers.

These properties are listed and indexed in the bulletin, and a great many of the specific applications of the wax are mentioned in detail.

A copy of the bulletin will be mailed free to any chemist or technical worker who desires the same.

Wood Preservation by Dipping

How plywood, structural woodwork and a variety of articles made of wood are being treated by the Lignophol dipping method to prolong their life and provide dimensional stability as well as water repellency, is the subject of a special report just issued by the Department of Industrial Research of L. Sonneborn Sons, Inc., 88 Lexington Ave., New York 16, N. Y.

The report, which is contained in a "Timely Topics" bulletin entitled "The Preservation of Wood by the Lignophol Dipping Method," describes the dipping of concrete forms, freight car linings, special boxes, ladders, outdoor furniture and other manufactured woodwork in various forms as "evidence of the growing acceptance of the Lignophol dipping method."

Predicting a broader and brighter outlook for wood in the postwar era

ALAKA has tailor-made

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finishes

You can't beat Alaka's experience when it comes to finishes.

"Impossible" problems have been Alaka's daily diet for more than a decade. Result: during these many years the Alaka research department has amassed a maximum of experience and facility. World-wide war-shortages of critical materials . . . and the necessity of solving special problems to aid in the prosecution of the war . . . are consequently but a continuation of Alaka's problem-solving routine.

Planes can fly faster because of the extra smoothness of SPEED-ALAKA . . . while Alaka engine finishes resist abrasion, corrosion, salt water and high-octane gas . . . due to that plus of experience born of Alaka's early specialization in tackling the toughest of finishing problems, and plenty of them.

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Write us on your letterhead and we will send you a copy of our new, complete, up to the minute catalogue of U. S. Government Specification Finishes.

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TO FIT YOUR REQUIREMENTS

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LACQUER & CHEMICAL CORPORATION

220 FORTIETH ST., BROOKLYN 32, N.Y.

because of the great progress made by the lumber and allied industries in the treatment of wood, the bulletin declares that the "natural penetrating and preservative qualities of Lignophol" contribute to longer life, water repellency and dimensional stability.

The report cites typical applications to illustrate the use of Lignophol as a dipping preservative for plywood, prefabricated structural units such as doors and windows, and other fabricated wood objects including ladders, tool handles, oars, paddles and baseball bats.

"Dipping such manufactured articles in Lignophol as a dimension-stabilizing preservative and water repellent is now being practiced by a number of manufacturers" who, the bulletin concludes, "report such treatment prolongs the life and insures the service of the wood articles in question."

Free copies of the bulletin may be obtained by writing the company named in this article.

Designs and Lays Out Complete Finishing Systems

Spra-Con is the name of a Chicago company that specializes in engineering, designing and supplying automatic painting equipment, and complete finishing systems. The firm is actively engaged in the industrial finishing field, offering the service and experience of many years in helping and laying out complete finishing systems and automatic painting equipment. Address is 2400 W. Madison St., Chicago 12, Ill.

Offers Color Chart to Aid in Postwar Planning

Ferro Enamel Corp., 4150 E. 56th St., Cleveland 5, Ohio, manufacturers of porcelain enamels, colors and other materials for the coating of metal products, has just published a Color Chart, showing its oxides suitable in producing colored porcelain enameled ware.

The chart is designed to show base-colors and blends. From the base-colors, the blends shown can be made, as well as many other shades and colors. Oxides are manufactured in the Color Plant of Ferro Enamel Corp.

Electrical Insulating Varnish

A new booklet, "DC Varnishes," describes the properties of DC 993 varnish and outlines the recommended procedures in applying this Dow Corning Silicone product to the insulation of electrical equipment.

Because of their inorganic skeleton, Dow Corning Silicone varnishes and resins are natural complements to inorganic insulating materials. Together they form an entirely new class of electrical insulation remarkable for its heat and moisture resistance.

A free copy of the booklet can be obtained by writing Mr. O. D. Blessing, Sales Manager for Dow Corning Corp., P. O. Box 592, Midland, Mich.

McNeil Now Sales Engineer for Mac Dermid, Inc.

Mac Dermid, Inc., Waterbury, Conn., recently announced the appointment of Arthur R. McNeil as Technical Sales Engineer for South Connecticut.

Because of his excellent background, Arthur McNeil is well qualified to service the metal cleaning compounds Mac Dermid, Inc. manufacturers, as well as engineer and install complete metal-finishing plants.

F. C. Strong III Joins The Enthone Co.

Frederick C. Strong III has joined the technical staff of the Enthone Co., as a development chemist. Mr. Strong received his B.A. in Chemistry from Swarthmore College, and his M.S. from Lehigh University.

American-Marietta Advances Important Key Men

Paul P. Weber was elected secretary to succeed Ray L. Oughton, promoted to executive vice-president, and Emery E. Bergfors was appointed assistant treasurer at a recent meeting of the American-Marietta Co. board of directors in Chicago.

Detrex Shifts Cooper to New England

As part of the expansion program of the Alakli Division of Detrex Corp., Detroit 27, Mich., Joel N. Cooper will transfer from Michigan to the New England states where he will supervise sales of alkali and emulsion cleaning materials.

Detrex Corp. manufactures alkali and emulsion cleaning compounds, solvent degreasers, metal parts washers, chlorinated solvents, dry-cleaning and oil-extraction equipment. Mr. Cooper's headquarters, Meriden, Conn.

Could you write this letter to your Finish Supplier?

THE F. W. Wakefield BRASS COMPANY

VERMILION, OHIO — TELEPHONE: 2100

Ault & Wiborg Corporation
P. O. Box 37, Sherman Station
Cincinnati 7, Ohio

June 15, 1944

Gentlemen:

We have received your letter of June 13th regarding the salt spray test you conducted on panels we forwarded to you sometime ago. We also have the panels themselves.

We would like to express our appreciation of your efforts in this instance. This test has been very helpful.

At this time I would like to repeat what I have often said before. We appreciate the service and quality of material which your company furnishes. We also appreciate the kind of company furnishes. We also appreciate the kind of cooperation you give us on delivery and in the handling of information relative to delivery of orders. The technical help you give us from time to time is also very helpful. Our relations with you have been very pleasant and we hope that this condition will continue as long as we require the type of finishes you furnish.

It is very pleasant signing orders which are going to suppliers who perform as you have. Wishing success for you personally and for your company during the coming years, I am,

Very truly yours,

THE F. W. WAKEFIELD BRASS COMPANY

Earl A. Schroeder
Secretary

Cold-rolled steel diffusing shields for F. W. Wakefield Brass Company's fluorescent lighting fixtures are sprayed with one coat of high-reflectance white Polymerin* and baked for ten minutes at 300° F. in a near infra-red radiant energy oven. High-reflectance white Polymerin provides a minimum reflectance of 85 percent, in contrast with ordinary enamels' reflectance value of approximately 79 percent. Thus, for F. W. Wakefield Brass Company, Polymerin both speeds production and helps them produce products of highest quality.

A&W POLYMERIN

The Original Speed-bake finish

A PRODUCT OF AULT & WIBORG
DIVISION OF INTERCHEMICAL CORPORATION

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Please send, without obligation, "The Facts on Polymerin"—the 32-page, illustrated booklet which tells in detail how Polymerin has increased production speeds and provided a more durable finish for leading products of nine major industries.

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Industrial FINISHING

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Editorial

Long Working Hours vs. Total Output

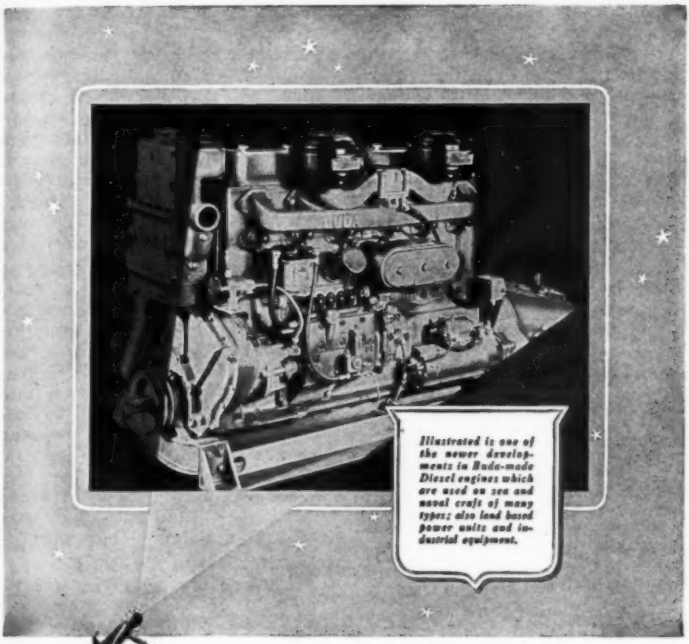
★ Careful studies of the reactions of workers whose work week has been lengthened, reveal much data of special interest. Although perhaps no established rule can be made to determine the most desirab'e schedule, *actual experience shows that an increase in the working hours per day causes an increase in absenteeism, plus a decrease in efficiency.*

In the finishing department of a large midwest aircraft plant, a survey was made of the absenteeism rates under various length work weeks. Because of material shortages during the early part of the month and an excess of material during the last two weeks of the month, it was necessary to increase the working hours from 8 hours to 10 hours, and sometimes to 12 hours a day. In the case of changing from 8 to 10 hours per day, there was a small increase in absenteesim, but when hours were raised to 12 per day for a 7-day week, absenteeism nearly doubled, particularly on Saturdays and Sundays. This condition would automatically correct itself at the beginning of a new month, when material flow would permit the hours to be reduced to 8 hours per day.

In a check on the efficiency rate in the same department it was found that over an extended period of time the employees produced less per hour of work when the schedule was raised over an 8-hour day. Obviously this can be traced to the specific conclusion that the increased demand made upon the physical and nervous energy of the worker has direct relation to his or her output.

This condition is typical, and is probably one of the most serious, of the problems encountered by

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.


Illustrated is one of the newer developments in Buda-made Diesel engines which are used on sea and naval craft of many types; also land based power units and industrial equipment.

Diesels by Buda--
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Internationally known maker of Diesel engines and other important equipment is the Buda Company of Harvey, Illinois, whose products provide efficient power vital to both military and industrial use.

For many years Buda motors and hoods have been finished with a spray applied air drying coating supplied by Lowe Brothers to provide protection against a wide variety of climatic conditions.

Like Buda, many other makers of important industrial equipment know that Lowe Brothers finishes are the product of intensive and continuing research. This type of study coupled with high manufacturing standards assures the right product for many varying work and exposure conditions.

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DAYTON, OHIO

Lowe Brothers
FINISHES *for Industry*

wartime supervisors. It can be appreciated that the supervisor's objective of producing war supplies better, faster and cheaper, is seriously hampered when he is forced to plan working hours to meet the required schedule. In the coming period of uncertainty, it is hoped that although competition will be intense, labor will be available in such a quantity as to reduce working hours sufficiently to raise manufacturing efficiency, even higher than its prewar level.—WILLIAM W. LOMAN.

Women in Industry—As a Woman Sees It

★ Under present emergency conditions, women have been granted a measure of equality in competing with men for employment in all fields of work, and a great diversity of opinion has arisen as to what the consequences of this new attitude will be after the war.

It has been only a few years since the supposition existed in the minds of most employers that, regardless of the job involved, any man's work was vastly superior to any woman's work. It is to be sincerely hoped that such an attitude will never become wholesale again, and that recognition will be given to women in the fields for which they are inherently fitted and scholastically trained. Such a classification narrows the field to a great extent and will, of course, be subject to many interpretations.

One example I can give from my own experience: The paint industry, from a laboratory viewpoint, has definitely profited from the inclusion of women technicians. Statistics show that the majority of cases of color-blindess are exhibited by men. Wherever color-matching is of such prime importance, and while standardization by mechanical means is still far from perfect, women can be of definite use. The tedious detail work of the control laboratory can be carried on quite successfully by women who adapt themselves with little trouble to routine work and are, on the whole, more exacting in requiring perfection.

This is also true on inspection work in consumer industries where standardization is necessary and even slight defects in painting results must be caught and "weeded out" as quickly as possible. Naturally some women are better than others at these jobs and in individual cases might be surpassed by a man, but personal observations in this limited field have been overwhelmingly in favor of women technicians who have had more scholastic training than men applying for the same jobs.

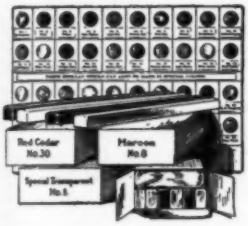
I have every sympathy with the concern of servicemen overseas who are wondering about the availability of jobs when they return. As the widow of a veteran of the present conflict, I have another view as well—that of the necessity for supporting my young fatherless son. However, this article expresses my true views: That regardless of personal reactions and circumstances, women, like men, should be judged on a merit basis only.—MARGARET EVANS.

More Screen Process Developments Ready

★ The needs and necessities for war have brought about great strides in the creation and improvement of new processes and the perfection of many of the prewar

WOOD CEMENT

Shellac Sticks
Cement Sticks
Lac Sticks



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Behlen's Diamond B Wood Cement has been used and preferred by master craftsmen and professional hardwood finishing organizations throughout the country, for over 50 years. The extensive range of color shades, the even texture and the use of the finest raw material in the manufacture of Behlen's Diamond B Wood Cement have given it the nationally-recognized reputation it holds today.

Write for color card and list. Any shade, other than carried in stock, can be made to meet your specifications in six dozen lots or over.

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Palette Knives, electric burning in knives, spatulas, glass lamps, electric knife heaters, flint and garnet finishing papers, pumice, rottenstone, New Wood, polishing materials.

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processes for reproduction and finishing. One that has made rapid strides is the screen process system of reproduction. Although several of the new developments have not been widely used, even in the turning out of war contracts, these improvements are to be the backbone of the fast growing means of reproduction which will surely come into its own in our postwar industry.

Development of a new dye that can be silk-screened onto practically all types of cloth, retain its brilliant colors, withstand the fastness tests, produce no stiffness, and require no calendering of the finished product, has been announced and will lend itself well to the making of special designs for furniture fabrics, shower curtains, linoleum patterns, and special cloth and paper box designs.

The recent working out of a positive photographic system for the making of fine-line screen stencils will also further the range of work that can be done with this process. This new system will greatly increase the use of woodgraining screens for furniture, delicate work on ceramics and porcelain enamel, and will also open a field for the application of photographs and fine work on many of the new materials.

With several new types of plastic materials being introduced for use in so many fields today, the screen process will do much to develop the maximum uses for some of these. The application of hot dyes on portions of plastic materials for the decoration or enhancement of the finished product can and will be done by the screen process system.

The introduction of motor-driven squeegees into screen process work will release another large field of possibilities. In the past such work was done by hand, but the development of new mediums that work successfully in fountain-type squeegees (motor driven) and successfully dry under infra-red lamps will add immeasurably to the speed of production on items which in the past, were impracticable due to high unit cost of production.

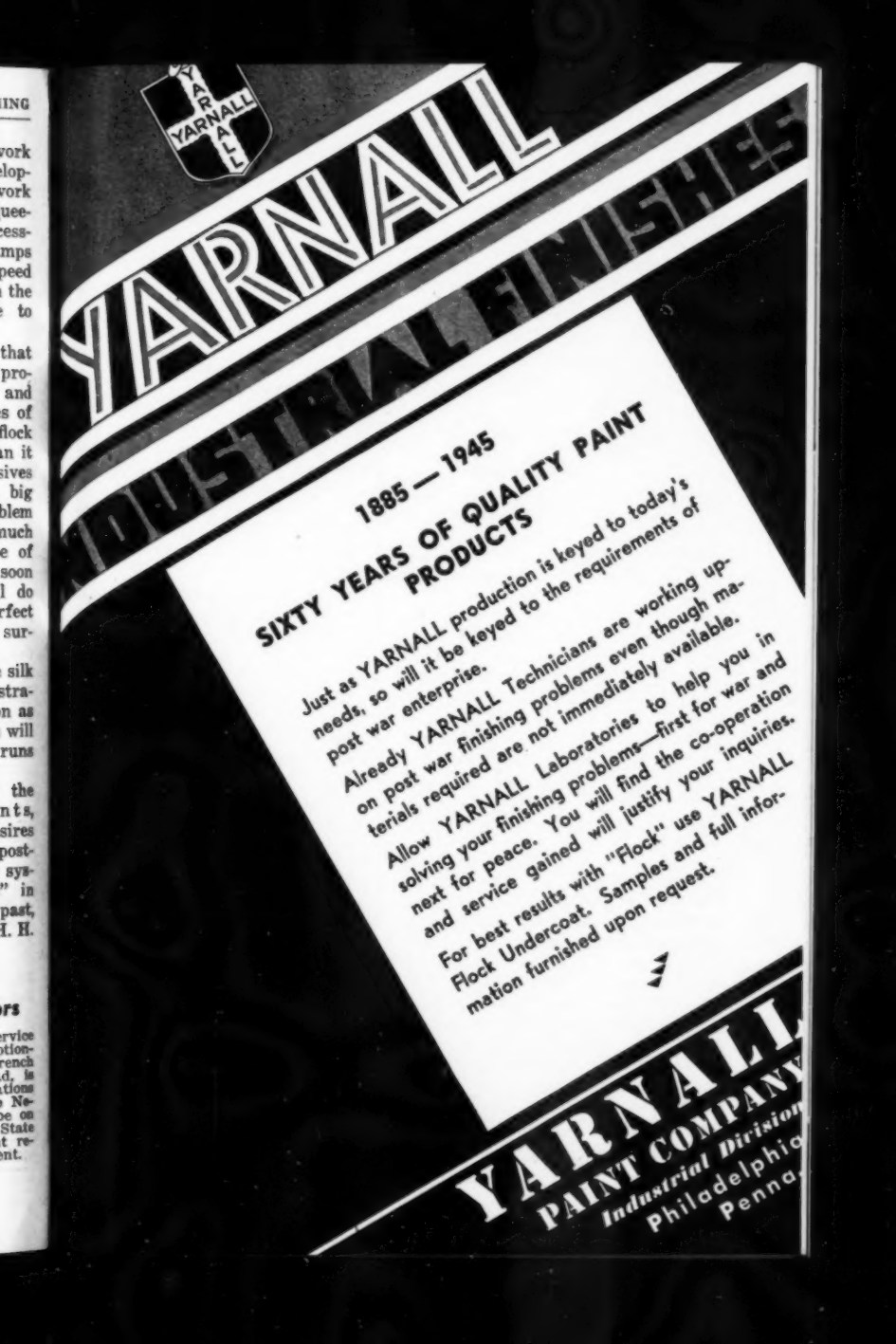
New adhesives and glues that can be screened will aid the processor in turning out better and larger jobs with different types of flock. In the postwar world flock should find even more uses than it has in the past, for the adhesives have always been one of the big problems. Now, with the problem solved, the sailing should be much smoother. A new plastic type of glue, which will be released as soon as the war needs lessen, will do much toward providing a perfect bond between the flock and the surface upon which it is applied.

A new metal mesh to replace silk for the finer and closer registration work will be ready as soon as the metal can be released. This will greatly increase the length of runs for many types of jobs.

With the introduction of the aforementioned developments, coupled with the needs and desires for better civilian goods in a postwar world, the screen process system should become a "must" in numerous plants which, in the past, have never used the system.—H. H. MENEFEE.

Welcomes Foreign Visitors

Establishment of an Export Service Bureau in New York, with a receptionist speaking both Spanish and French to welcome visitors from abroad, is announced by the Foreign Relations Department of E. I. du Pont de Nemours and Co. The office will be on the 11th floor of the Empire State Building, adjacent to the present reception room of Rayon Department.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Just as YARNALL production is keyed to today's needs, so will it be keyed to the requirements of post war enterprise.
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Jobs for Tomorrow—Thousands of business executives will be called upon by returning servicemen, in the months ahead, for down-to-earth advice on peacetime employment opportunities. As a bible for the bewildered, we heartily recommend a new book that has just reached our desk—*Twenty Careers of Tomorrow*, published by Whittlesey House.

In this conscientious study by Darrell and Frances Huff, many varieties of postwar opportunities are described in fascinating detail. "There has never been a time when the job outlook was either so vague or so exciting as it is now," write the authors. "There never has been a time when a right decision could offer half so great promise of accomplishment."

* * *

Good Colors Are Kind—Reporting in a recent issue of *Progress Guide*, Walter King emphasizes the accomplishments that have been chalked up by the new science of color engineering. During this war, it has been demonstrated many times that the proper use of color in office and factory improves morale, speeds production and increases safety.

The author cites a typical case history: Production in a shoe factory was dropping, with sharp increases being registered in spoilage and in accidents. Workers complained of headaches. When the color expert went to work, he discovered that employees were working on black shoes at machines painted black. When the equipment was repainted in light, contrasting colors, production skyrocketed and accidents dropped off 70%.

* * *

New Plastic for Navy—Waldemar Kaempffert, Science Editor of The New York *Times*, reports the development of a noteworthy plastic which combines the qualities of fire-resistance and shock-resistance together with easy molding properties. The product was perfected for the Navy by General Electric.

Learning that it was impossible to use any considerable quantity of organic filler in this type of material without producing poisonous gases, asbestos was finally adopted. Being flame-resistant, harmless, easily molded and shock-resistant, it proved to be the ideal solution of the problem.

* * *

Packaged Dwellings Again—After several hesitant starts, construction is finally under way on 100 "packaged" homes at Litchfield Park, Arizona, under the auspices of the Goodyear Tire & Rubber Co. This experiment is being watched with deep interest by many sections of American industry.

The dwellings are designed to be sold as a complete unit, *including most of the furniture*. A monthly installment purchase plan, somewhat similar to that used for automobile sales, has been worked out by the sponsors.

Each dwelling is delivered to the

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No need for guesswork in the testing of your own or competitor's products for wearability or resistance to surface abrasion. The Taber Abraser gives you the facts with scientific precision—yet the procedure is as practical as it is accurate. Eliminates time-consuming, expensive performance tests. Used by hundreds of manufacturers and research laboratories for testing surface wearing qualities of paints, lacquer, plastics, leather, rubber, paper, electrotypes, etc.

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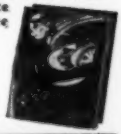

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Sample $4.50 pp.

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site fully assembled. Wings or bays at the end of the house may be telescoped to permit moving on the open highway. Each house, when erected, is 26-ft. long and 15-ft. wide. It can be moved on a railroad car, trailer or truck with little trouble.

* * *

Versatile Newcomer—As most of us have learned, the principal ingredients in making synthetic rubber are styrene and butadiene. Now the Dow Chemical Co. has taken these two materials and whipped them up into a remarkable new chemical marvel.

Known as styraloy, the formulation can be used to make a wide range of items — all the way from unbreakable cigaret cases to shotgun shells and water pipes. According to Dr. Willard H. Dow, the material is so light that it floats on water; yet it can be used as a decorative floor covering which wears like iron.

Experiments have been inaugurated using styraloy for doormats, refrigerator trays, shoe heels, and automobile running boards. It can be produced in all colors by the addition of dyes or pigments.

* * *

Fast Trains Coming—All observers seem to agree that the postwar years will witness the greatest volume of travel that the United States has ever seen. The Pullman-Standard Car Mfg. Co. is formulating many ambitious plans to meet the oncoming surge.

One of the new speedy, lightweight designs is a 3-tier sleeping car with a capacity of 42 berths. Seats in this car will be built on one side, with the aisles along the windows on the other side. Another innovation is a "threedex" coach, which will have accommodations for 112 passengers on three separate levels. We should be able to look forward to some exciting new experiences in peacetime journeys.

* * *

Furniture Critic — Some sharp words were addressed to America's furniture industry a few weeks ago by Edward J. Wormley, industrial designer, at a dinner meeting sponsored by the Architectural League of New York. The speaker contended that we have not learned to use our fabulous industrial plant to produce the greatest good for the most people. "Why aren't there good chairs for five dollars?" he demanded, "and good end tables or small all-purpose tables for five or ten dollars?"

In the course of his talk, Wormley also predicted a revolution in the manufacture of upholstered furniture. This will come, he declared, through the introduction of removable seating sections, made of a combination of spring and latex rubber supported by inner frames of lightweight metal.

* * *

Good News, If True—That long-awaited boon to worried motorists — a genuine non-skid tire — seems close to perfection. Developed by Clarence and Lonnie Gapen, of Morgantown, W. Va., the tire is said to work as well on wet summer pavements as on icy winter highways.

Made of a combination of rubber and abrasives, the product has the surface feel of fine sandpaper. The abrasive is a sawdust mixture. Chemists have been battling this problem for more than 25 years, and it will be good news indeed if the early reports prove to be justified. *(Continued on page 120)*

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I. C. D. FORMULA NINE
NON-INFLAMMABLE
« *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER-CLEANING

ORDER TRIAL GALLON AT DRUM PRICE

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.

SPECIALTY COATINGS—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

INDUSTRIAL CHEMICAL DEVELOPMENT CORP.
247 MADISON AVE. NEW YORK 17, N. Y.

Preserving Engines—A thin protective coating of aluminum is now being used on cylinder head and barrel assemblies for Pratt and Whitney aircraft engines built by Chevrolet. The film is applied by spray in a metallizing machine, serving to protect the engines against the corrosive effects of extremes of weather.

This simple and relatively inexpensive process will probably be adopted in the peacetime years ahead for many other protective applications.

* * *

Swamped by the Bear? — The development of Russia's resources in the next 15 years will practically "compel" her to buy American. That was the cheery forecast passed along by Ernest C. Ropes, of the Department of Commerce, before a recent meeting of the Overseas Automotive Club.

"Moscow's plans are still too vague for anyone outside to know in detail what the U.S.S.R. will buy abroad," Ropes remarked, "but we may be swamped with orders and may have to dole out our production for several years after reconversion is complete." He also pointed out that the Soviet Union has the highest standing as a debtor, after 25 years of experience as a borrower from many countries.

* * *

Limit on Light Metals — J. S. Laird, Ford Motor Co. engineer, disputes the contention that aluminum and magnesium will be widely used after the war in automobile manufacturing. Because of the softness of light metals, he contends, they cannot be used for *any* engine parts, transmissions, chassis frames, axles or brakes.

Verification of Laird's statement has come from Brig. Gen. C. D. Young, deputy director of the Office of Defense Transportation. Testifying before a Senate committee, the general cited the Pennsylvania R. R.'s experience to show that builders of high-alloy steel rolling stock could compete in price and lightness with builders using aluminum. Young believes, however, that there are wide opportunities for the use of light metals in the bus and truck transportation field.

* * *

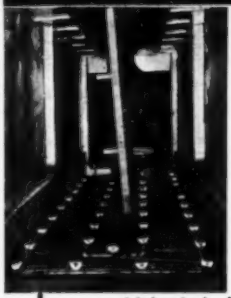
New Acid-Proof Paint—In formulating floor coatings, the usual procedure is to attempt resistance against an alkali, an acid or a solvent. But Durez Plastic technicians now tell us that they have produced an enamel made of oil-soluble resins of the pure phenolic type that will tackle all three problems in one product.

According to a report issued by this firm, the enamel developed in their laboratory will stand up under chlorbenzol, hydrochloric acid and lime — at the same time. The Durez Co. hastens to point out that it is not manufacturing paints for commercial sale, but only in small experimental batches necessary in the development of new materials.

* * *

Service to Readers—Subscribers to INDUSTRIAL FINISHING may obtain free broadcast tickets to many leading shows. When planning a trip to Manhattan, drop a line to: *Lawrence H. Singer, 130 West 56 Street, New York 24, N. Y.* Among the cooperating sponsors are: Phillip Morris & Co., Ltd. ("It Pays To Be Ignorant"), Elgin National Watch Co. ("Keep Up With The World") and the WOR—Mutual Guest Relations Dept.

Drying Time Reduced... 76 2/3%



with

BURDETT *(The Original)*
INFRA-RED GAS BURNERS

Indirect-fired 30 minutes @ 200° F.
Burdett Infra-Red time 7 minutes @ 200° F.

That is from the records of the Canadian Top & Body Corp., which is further proof of the remarkable results that pyramid into revolutionary savings in labor, material and fuel, and the elimination of rejects. This user further testifies that the heat contained in the parts from processing the prime coat was sufficient to force dry the finishing coat—a complete operation eliminated! Get the facts on Burdett "Infra-Red" Gas Burners in connection with your heat processing.

21 NORTH LOOMIS STREET, CHICAGO 7, ILL.

BURDETT MANUFACTURING CO.
Infra Red Gas Burners

Just for the Record

REMEMBER THESE NAMES

After V-day they will mean something to you!

▼

CEL-U-LAK

A complete line of cellulose derivative lacquers and enamels.

▼

FORM-A-ROC

A unique line of quick-baking, tough adhesive synthetic enamels.

▼

THE VARNISH PRODUCTS CO.
5208 Harvard Avenue Cleveland, Ohio

New Broadway plays worthy of your attention include: "Foolish Notion," the Theatre Guild's presentation of Tallulah Bankhead in Philip Barry's crisp comedy; and Margaret Webster's magnificent production of Shakespeare's "The Tempest," with Vera Zorina and Canada Lee.

Responsibility For Employee Accidents

★ An employee of a company was given a highly flammable fluid to clean the floor of a laboratory. The employee was burned in the explosion and fire that occurred, and died the following day.

At the inquest, the municipal court judge recommended a grand jury investigation, stating that evidence should be put before the grand jury to determine whether this employee came to his death by the reckless and wanton negligence of one of the owners of the concern and the chemist in immediate charge of the laboratory.

The judge stated that he had no doubt that on a thorough presentation of all the facts and evidence, a case of manslaughter could be established. The Chief of the Fire Prevention Bureau of that City said he felt that any man who would give such material to an employee for floor cleaning was grossly negligent.

The importance of this case, beyond the catastrophe and the suffering that resulted, is that there seems to be a definite trend in public thinking toward accidents. The public is no longer tolerant of negligence, not only where the public itself is concerned but in the case of industrial injuries as well.

Key men who are responsible for the safety of others, cannot afford to overlook their obligation in this respect. They should point out to those in charge of managing the organizations the tremendous effect such incidents have on industry's public relations. The attitude of the people toward industry in general affects industry's future. If industry is to be successful, the people of this country must continue to look upon it favorably.—NATIONAL SAFETY COUNCIL.

Phthalic Anhydride in Finish Materials

★ One of the early war restrictions affecting our industry was that of phthalic anhydride. This chemical, made by the oxidation of naphthalene, was used in synthesizing the increasingly popular alkyd resins. From early products which were difficultly soluble in expensive solvents and lacked stability and water resistance, alkyd resins had progressed (up to Pearl Harbor) to the position of outstanding usefulness in the coatings field.

Citing just some of the applications of phthalic alkyd resin base paint materials, we may mention finishes for automobiles, refrigerators, washing machines, metal containers, venetian blinds, utility cabinets, outdoor signs, wrinkle finishes, decalcomania, furniture and numerous others. Alkyd finishes for these purposes had proved themselves to be the most desirable from the standpoint of durability, color retention, application and economy.

The good reputation of these finishes was further enhanced when, after the outbreak of war, more and more government speci-

★Guest Editorial.

IWO JIMA

AIRPLANES
GUN STOCKS
BOMB SIGHT BOXES
TOOL CHESTS
MARINE PARTITIONS
RADIO INDUSTRY, ETC.
SKIS
INSTRUMENT BOXES

THE MARINES OF THE THIRD, FOURTH AND FIFTH DIVISIONS have written the greatest epic of the war with the blood of their fighting men in the volcanic ash of Iwo Jima.

Here was a strong island bastian with natural fortifications, gun emplacements and land mines to cover every square yard of terrain. Here was a battle ground selected and prepared by the enemy for two years which they believed was impregnable.

A grateful nation bows its head in reverence and respect for the brave men who stormed ashore in the face of death, destroyed the enemy and took the island of Iwo Jima and thereby placed our bombers approximately 750 miles nearer Japan.

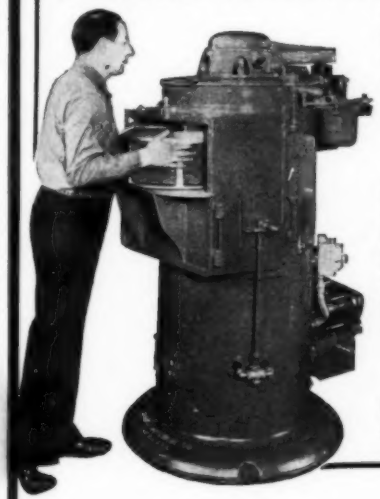
Listed here are a few of the war products now being coated with our materials. Phone, wire or write and let one of our finishing experts help you "keep production rolling."

SUPPORT THE 7TH WAR LOAN — BUY AN EXTRA BOND

The Lawrence-McFadden Co.

Headquarters for Fine Finishes Since 1875
7430 STATE ROAD PHILADELPHIA 36, PA.

INCREASED PRODUCTION AT A LOWER COST



ON ESSENTIAL SMALL PARTS

30 loads per hour can be processed in Lacquer or Enamel with our No. R-200 up to 75 lbs. to a load.

RONCI "SPEEDIP" WHIRL ENAMELER AND COMBINED WASHER AND DRYER

A combination dipping-whirling machine for coating large quantities of small parts. All operations are within the machine. Parts are dipped into coating material, raised and whirled. No additional tanks required. No cleaning when changing colors. Cuts costs and saves up to 90% of material.

Washer and Dryer operates on same principles.

Write for further information or submit samples to be coated.

RONCI MACHINE CO.

2 Atlantic Blvd. Centredale 11, R. I.

Fine...Fine
Superfine!
Claremont Flock
Finely cut fabric particles, many colors, many types . . . fluffy, yet filling. Excellent for sound-proofing, insulation and surface protection. Also, applied decoratively to assimilate suede leather finishes, velvet, velour and mohair upholstery effects. Full details, samples and prices upon inquiry.
COTTON
WOOL
RAYON
CLAREMONT WASTE MANUFACTURING CO.
The Country's Largest Manufacturers of Flock
CLAREMONT, NEW HAMPSHIRE

fications called for the use of glycerol-phthalate (alkyd) resins in the manufacture of paints which were subjected to severe outdoor conditions. The alkyd bandwagon, together with the large amounts of phthalic anhydride being used for other essential military purposes, has brought about the current situation where there is not enough phthalic anhydride available today to meet all military needs.

We shall all accept with good grace the necessity of using (or formulating, as the case may be) alternate materials where this procedure is required to help the war effort.

The cessation of hostilities will not necessarily mean the immediate availability of unlimited quantities of phthalic anhydride for civilian paint materials. The paints used on ships, planes and automotive equipment, and the phthalates employed in explosives, plasticizers and insect repellents will still consume a large percentage of all the P.A. made. The many excellent alternates (we must never call them substitutes) developed during the last three years will probably find continued uses for some time to come, and some of the alternate finishes, having proven themselves better than the coatings for which they pinch-hit, are here to stay.

Promises for increased output from new units using present pro-

cesses, and the probability of production of phthalic anhydride from ortho-xylene (to be available in large quantities from the petroleum industry) indicate that the shortage will not continue for too long a time.—M. A. GLASER.

What Colors Can We Make

★ This matter of what colors paint manufacturers can furnish is indeed a problem, with the present restrictions on chrome pigments, organic colors and yellow oxides of iron. Despite this, if the paint manufacturer will use his organic color quota for the purchase of a suitable yellow and a green, a fair range of colors can still be made.

Ivory and Cream: There are available domestic raw siennas which while not as clean and strong as those we formerly used, still produce passable colors. A small amount of Hansa or benzidine yellow helps to make cleaner shades.

Pastel Greens: There are two possibilities to produce these tints. One is to use Prussian or Chinese blue and Hansa or benzidine yellow. The other is to use an organic green toner.

Deep Greens: Same as for pastel green.

Blues: Certain ultramarine blues can still be purchased; and these, together with Prussian and Chinese blue, can be used to produce a wide range of blues from pastel to deep colors.

Yellows: Here the pinch is severe. Hansa and benzidine or similar toners are the only suitable colors, and their use is expensive.

Oak and Buff: Certain domestic ochers can be found which produce passable tints and shades. Red

Stop Dollar Loss from RUST!

Tectyl lets NO moisture reach the metal—gives tested, proven, *positive* protection against rust or corrosion—for as long as two years! Easy to apply and remove, economical to use. One of the five specialized Tectyl types will solve your special problem. Write today . . . tell us your corrosion-prevention needs. We will send Tectyl bulletin with complete application data.

TECTYL
STOPS RUST
VALVOLINE OIL COMPANY
456 Culvert St. Cincinnati 2, Ohio
Refinery at Butler, Pennsylvania
New York-Atlanta-Detroit-Chicago
Los Angeles-Vancouver
Washington, D. C.

SAFEGUARD YOUR SPRAY BOOTHS

Apply Wyandotte Spray Booth Coating *first* for quicker removal later of layers of inflammable paint. It takes only a thin coating to make cleaning easier, speedier, more economical. Write Wyandotte Chemicals Corporation, J. B. Ford Division, Wyandotte, Michigan, for full details!

Wyandotte F-100* will help cut your floor-cleaning costs. Even heavy soil disappears when this remarkable compound gets to work!

*Registered Trademark

MIRACLE

5 Gallon BLUE BOY Model

PAINT REJUVENATOR

Restores Paints, Lacquers, Enamel Products and Pigment Primers, to original consistency in 3 to 10 minutes without opening the can. Available for Round or Square 5-gallon cans. Explosion-proof electrical equipment if desired. Also other units from ¼-pint to 50-gallon drum capacity available. Originators of Paint Rejuvenating equipment — ten years — thousands of satisfied users.

Miracle Paint Rejuvenator Co.

127 E. 9TH STREET ST. PAUL, MINN.

INDUSTRIAL

BLANCHIT

(Reg. U. S. Pat. Off.)

CABINET-FURNITURE MAKERS'

WOOD BLEACH

Also For

Interior Woodwork Refinishing

L. R. van Allen Co.

Patent Licensee

CHICAGO 54.

DUST AND LINT

ARE THEY SLOWING UP YOUR PRODUCTION? IF SO,

Detroit Handy Tac Rags

will solve your problem. Remain tacky indefinitely. Non-combustible. At your Paint Dealer or write to Manufacturer.

DETRO SALES CO.

418 NORTH SAN PEDRO STREET

LOS ANGELES 12, CALIF.

lead may be used with these to give the redder shades.

Maple and Tan: The previously mentioned domestic ochers with red lead produce fair shades of maple and tan.

Browns: Domestic ocher, domestic raw or burnt sienna, with lampblack and red lead, will produce many valuable shades. Likewise certain brown iron oxides are available.

Reds: Here, of course, only organic colors produce the most desirable colors. However, the organic colors can be greatly extended by the judicious use of red lead and the brightest of iron oxides procurable.—H. H. MILLER.

Sand Wood Smooth Before Finishing

I TAKE this occasion to again emphasize the importance of properly preparing wood furniture (in the white) to be finished — an old subject which has probably been written about more than anything along the finishing line. What is needed now is action, not writing. Every finisher realizes that a piece of furniture must be sanded smooth in order to get a finished job that looks like anything. The sanding must be done at the proper place which is not the finishing department. It should be done in the sanding department or cabinet department.

Perhaps this is no time to mention a subject like this when every where you look there is a labor shortage, but if you had seen what I have known to occur because of this one thing, you would realize why I am writing on the subject. I have seen foreman finishers loose their jobs over not getting a good finish on furniture, when the whole

trouble was in the sanding; in other words, improper preparation of surfaces before application of finishing materials.

I have noticed in the show windows, nice suites de-valued because there were sand marks showing through the finish. I have also noticed poster beds which were positively rough around the turnings.

My remedy for this condition would be to have a qualified man inspect the pieces to be finished in the cabinet department. This man should be from the finishing department so he would have a thorough knowledge of a piece of wood when sanded properly for finishing. It is seldom that a sanding-room man knows when a piece of wood has been sanded correctly. Sanding should be performed under the most favorable lighting conditions. In several factories I have noticed that the sanding room and the cabinet departments did not have sufficient light. — L. G. FARMER.

Places for Portable Fire Extinguishers

PORTABLE fire extinguishers should be placed where they are readily available, and where access to them is not likely to be cut off by fire.

When used to provide general protection for an area containing normal fire hazards, extinguishers should be so placed that at least one large or two small ones can be reached by traveling no more than 50-ft. from any point in the area. Fewer extinguishers are required where the fire hazards are light, and more where they are severe.

When the extinguishers are used for safeguarding a specific fire hazard, they should be mounted near it, but not on or so close to the hazard that they will be involved if it catches fire. If the hazard is located in a relatively small room, it is good practice to mount the extinguishers either just inside or outside doorways leading into the room. Operators can easily get at extinguishers so placed and have a safe line of retreat in case of necessity.

Extinguishers may be mounted on columns or walls, with hangers, brackets or shelves as supports. The tops of easily handled units should not be more than 5-ft. from

NALCO
Infra-Red Ray Lamps
Best for Infra-Red Ray Baking and Drying
Carbon Filament Lamps, service proven, available in Inside-Silvered (self-reflecting) or in Clear Glass types. Write for details.
North American Elec. Lamp Co.
1030 Tyler St. St. Louis 4, Missouri

Automatic Conveyor — Dipping, Baking, & Silk-Screen Printing—
Also Assembly—Stamping & Japanning.
FINISHING & STAMPING DIV.
AMERICAN DECALCOMANIA CO., INC.
4334-5th Ave., Chicago 24, Ill. Kedzie 8144

Doster

BOOTH KOTE

Doster BOOTH KOTE is the easiest, fastest and most economical way to keep spray booths clean of overspray.

Just daub it on—

and when loaded with paint and lacquer—

Just scrape it off—

as easy as peeling an orange. A boy can do the job, easily. Protects booth, tunnel and fan.

5 gals. at $1.25 per gal.
F. O. B. Factory

INDUSTRIAL DIVISION
Doster & Company
4840 W. Superior, Chicago 44, Ill.

TEXKIN

the Original Invisible Glove Containing Beneficial Lanolin

Texkin protects worker's face, hands and arms against industrial dermatitis, as well as the stains of lacquer, paint, oils, grime, ink, etc.

Just rub it on—

before starting to work, and

Just wash it off—

at the end of the shift. Simple, efficient, effective.

Prove Texkin's superiority in your own work shop. Quart, $.80; gallon, $2.00 Postpaid.

5 gals. at $1.70 per gal. postpaid.

Doster & Company
4840 W. Superior, Chicago 44, Ill.

the floor; with heavy units, this distance should not exceed 3½-ft.

Extinguishers should be placed where they can be plainly seen. When they are wholly or partly concealed, their locations should be marked with conspicuous signs.

Nothing that might interfere with the accessibility of an extinguisher should be placed under or near it. All extinguisher locations should be checked at least once a day, and any obstructions found should be removed immediately—SAFETY RESEARCH INSTITUTE.

Agitate Contents of Drum First

WHEN paints or pigmented finishing materials are withdrawn in small quantities from a large shipping drum, it is important to agitate or stir the entire contents of the drum before such withdrawals are made.

The contents of a drum can be agitated in various ways; the main point to keep in mind is to continue the agitation long enough to accomplish satisfactory results; in other words, to thoroughly re-mix any settled pigment with the liquid part of the material, so as to make the contents uniform in viscosity and color.

Various types of internal agitators are available for this service, as are also machines for rolling or shaking the entire drum and its

MISKELLA
INFRA-RED OVENS & APPLIANCES
INSULATED - REFLECTIVE - SECTIONAL
BY
INFRA-RED ENGINEERS & DESIGNERS
1633 E. 40th STREET - CLEVELAND, OHIO

REGOLAC

A new line of finishes for wood and metal surfaces. Made by the manufacturers of world famous Titanine Aircraft Finishes—.

DIVISION OF TITANINE INC.
Union, New Jersey

contents. As stated previously, the essential thing is to continue the agitation long enough to do the job right.—C. E.

How Color of Machines Aids Workers

TIME studies on standardized tasks show that a scientific color treatment of machinery reduces the time previously required to perform certain operations when the machines were painted in the traditional dull gray. Wherever output depends on the speed and accuracy of machine operators—and this is true throughout the industrial world—better sight and greater safety at the immediate working areas are especially important. This insures quick accurate vision and, as a result, workers are able to perform their tasks more efficiently. Errors are reduced to a minimum. Flaws are quickly and readily spotted. Increased production is a natural result. Under such conditions workers' eyes function quickly and accurately. Their hands respond efficiently and accident hazards are automatically reduced.

Remove Production Line Dust, Lint, and Sand Particles with this Soft Tacky Cloth before applying finish.

CRYSTAL TACK RAGS

Gross Lots Available Thru Paint Dealers or from the Processor.

Baughn Chemical Products Co.
8151 So. Crandon Ave., Chicago 17, Ill.

Discontinues Shrivel Finish

A March 9 letter from S. C. Johnson & Son, Inc., Racine, Wisc., states that: "Our costs on raw materials necessary to manufacture Shrivel finishes have risen to such a point it is no longer possible for us to entertain Shrivel orders at current prices. And inasmuch as it is impossible for us to raise them, effective March 15th, we will be unable . . . much as we would like to . . . to be a source of supply on these finishes."

Optimus Equipment Co. Appoints M. C. Boss Engineer

The Optimus Equipment Co., Matawan, N. J., manufacturers of metal washing and drying equipment, announces the appointment of Marcel C. Boss, as Chief Engineer in charge of design and production operations. Mr. Boss has had a long and varied experience in the manufacture and use of such equipment.

Classified Advertising

Rate: 50 cents per line per insertion—minimum $1.50

SITUATION WANTED

Sales engineer desires connection with high-grade manufacturer of lacquers and synthetic specialties for New England territory. Will consider other lines for wood, metal and plating trade. Wide experience and established trade. Address IF-187, care Industrial Finishing.

WANTED

Industrial paint chemist and service man. Must be experienced in formulating and technical problems. Excellent opportunity. Large Chicago manufacturer. Address IF-184, care Industrial Finishing.

WANTED BY

Industrial Paint Company, supervisor control laboratory with thorough knowledge production uses of paint, acquainted with procedures in testing paints, varnishes and lacquers. Responsible position, good future. State full details. Address IF-185, care Industrial Finishing.

TECHNICAL SALESMAN WANTED

Manufacturer of rust preventives who is selling 600 industrial accounts desires to contact technical salesman familiar with cleaning materials and methods of marketing. To have full charge of introducing new line of cleaning materials to our present industrial accounts. Wonderful opportunity for experienced man having considerable training in industrial cleaning materials field. Please give past experience, age and present vocation in reply. Address IF-186, care Industrial Finishing.

FORBES BAKING PRIMER

100 — 55-gal. drums Forbes Dark Grey Baking Primer @ 40c.
In excellent condition. All or part. No priorities required. RAND CHEMICAL PRODUCTS CO., 2335 So. Mich. Ave., Chicago 16. Phone CALumet 2866-67.

FINISHING FOREMAN

With proven experience in finishing wood cabinets wanted by woodworking company in the East. Good opportunity with definite possibilities of postwar future. WMC clearance from local USES office required. Those now engaged in essential activity should not apply. Address IF-188, care Industrial Finishing.

SALESMAN WANTED

Manufacturer of a complete line of finishes for the products of industry has an excellent opportunity for a capable salesman in Wisconsin. Must be thoroughly experienced, preferably with good practical and technical knowledge, and strictly top notch. Our proposition will interest the right man. All communications confidential. Address IF-189, Industrial Finishing.

POSITION AVAILABLE AS ENGINEER

POSITION AVAILABLE AS ENGINEER — With oven and finishing equipment experience. Position requires individual with practical background involving good working knowledge of oven and finishing equipment. Excellent opportunity for steady employment at attractive salary. Permanent post-war opportunity, as this position is not created by or dependent upon war work. Interview can be arranged by submitting full information together with recent photograph to IF-183, care INDUSTRIAL FINISHING, Indianapolis 4, Ind.

TO COMPANY PRESIDENTS:

Today—thanks largely to you and other industrial executives—22,000,000 civilian workers are speeding victory and achieving postwar security through the Payroll Savings Plan. Over 60% of the 6th War Loan subscriptions came from this source—and, between drives, this forward-looking plan has been responsible for 3 out of 4 War Bond sales!

Good as this record is, the Payroll Savings Plan can be made more effective by giving Bond buyers a definite idea of the many benefits accruing to them. To accomplish this the War Finance Division has prepared a variety of active aids—*an entertaining moving picture, an interesting booklet and a handy War Bond envelope.*

Passing this particular "ammunition" requires that you reappraise your own company's Payroll Savings Plan. Have your own War Bond Chairman contact the local War Finance Committee—today! They will welcome the chance to discuss this new program with you.

The Treasury Department acknowledges with appreciation the publication of this message by

INDUSTRIAL FINISHING

This is an official U. S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council

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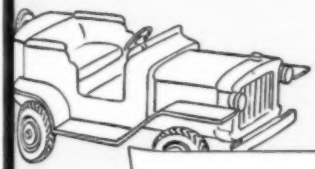
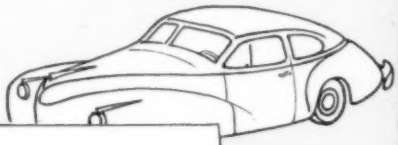
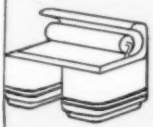






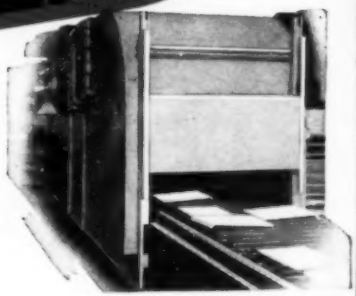
It may be just around the corner or it may be many months away. When it does come we here at ADVANCE will be ready for it. We're still doing our part in the war effort but we are also thinking and planning ahead. When post-war reconversion does come we'll be prepared to meet it — and we'll be ready to help you *meet your reconversion finishing problems.*

ADVANCE PAINT COMPANY

Manufacturers of Wood & Metal Finishing Materials

INDIANAPOLIS, INDIANA

WAR PRODUCTION *has brought* BIG IMPROVEMENTS *in* INDUSTRIAL OVENS

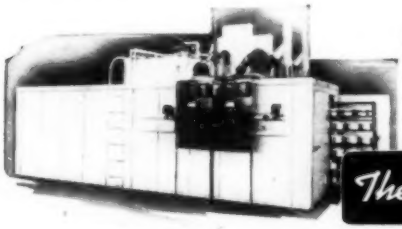


Advanced TECHNIQUES UTILIZED *by* KIRK & BLUM ENGINEERS *in* DESIGNING PRODUCT FINISHING *Equipment*

Ever on the alert for better, faster methods of product finishing, high-speed war production has served as an immense stimulus to advancement in oven design and drying and baking techniques.

Kirk & Blum "Oven Engineers" have long specialized in the oven field. The members of our Staff are thoroughly abreast—in many ways ahead—of the times. Their thoroughgoing knowledge of up-to-the-minute oven technology speaks for itself in modern, greatly improved industrial ovens and dryers, planned, designed, and installed by Kirk & Blum in leading manufacturing plants throughout the nation.

Whatever the nature of your particular product-finishing operation, you will find it definitely to your advantage to obtain the expert advice and counsel of Kirk & Blum Engineers. Their years of specialized experience in this field are your solid assurance of top oven and dryer performance and economy.



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